The Journal

OF THE

AMERICAN ASSOCIATION OF NURSE ANESTHETISTS

NOVEMBER 1945

VOLUME XIII NUMBER FOUR

TIME WILL TELL

PURITAN MAID

TRADE MARK REG

A Reputation earned over a quarter of a century has built the confidence the Medical Profession has in "PURITAN MAID" Medical Gases.

NITROUS OXID ★ CYCLOPROPANE ★ ETHYLENE

OXYGEN ★ CARBON DIOXID ★ HELIUM

mixtures of

Helium ★ Oxygen & Carbon Dioxid ★ Oxygen

***Buy with* CONFIDENCE**

PURITAN

COMPRESSED GAS CORPORATION

"Puritan Maid" Anesthetic, Resuscitating and Therapeutic Gases

BALTIMORE BOSTON CHICAGO ST. PAUL DETROIT
CINCINNATI KANSAS CITY ST. LOUIS NEW YORK

Puritan dealers in principal cities

35 years among the first

In 1910, an assemblage of experts ranked ether first among the ten most important drugs. In 1945, a similar compilation shows ether still crowding even penicillin, the sulfonamides, and anti-malarials for top rank. Thus after 35 years, ether retains a place among medicine's most important agents.

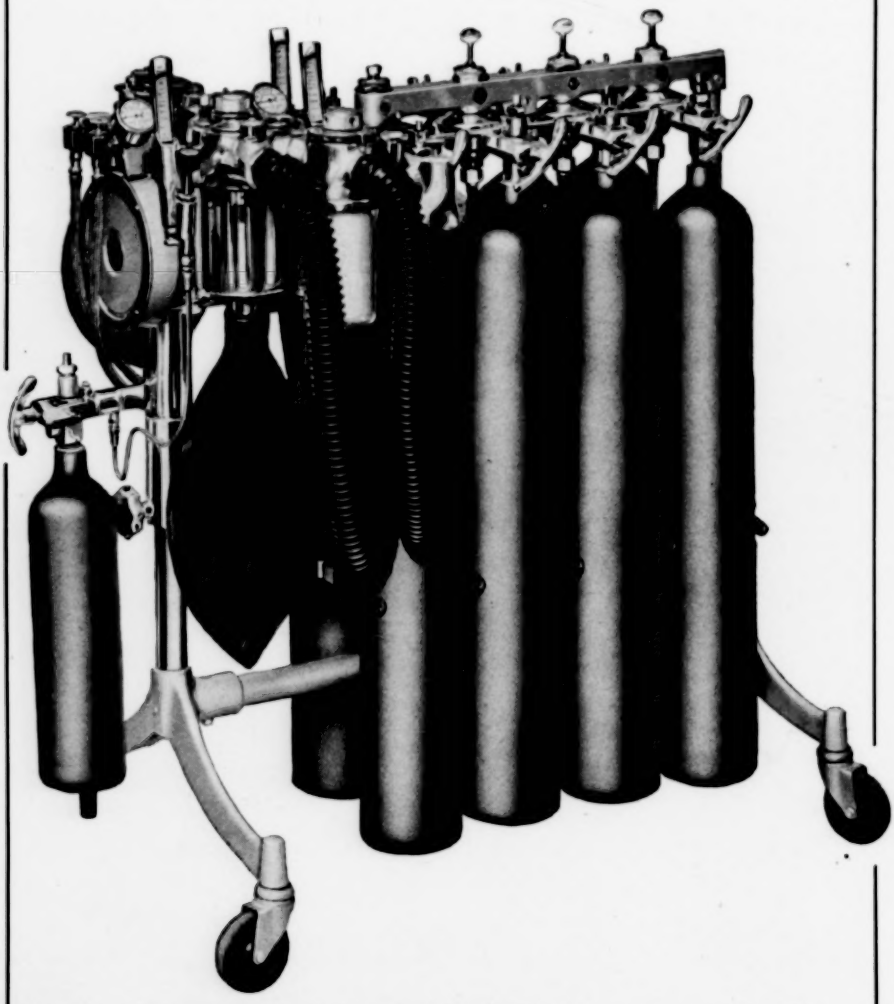
For more than 87 years, surgeons all over the world have depended on Squibb Ether, confident of its purity, uniformity and efficacy.

SQUIBB *Ether*

MANUFACTURING CHEMISTS TO THE MEDICAL PROFESSION SINCE 1858

•THE McKESSON 920-L•

MAKING NEW FRIENDS EVERY DAY AMONG ANAESTHETISTS WHO STRIVE TO DO SUPERIOR WORK IN GAS-OXYGEN ANAESTHESIA



The McKESSON APPLIANCE CO. Toledo 10, Ohio

He Works for a Better Tomorrow

AMID a maze of test tubes, beakers, flasks, and other laboratory apparatus, the research chemist diligently searches for new means of preventing and combating disease. By conducting intricate and delicate experiments, he extracts from nature the secrets of the vitamins, hormones, amino acids, antibiotics, and other substances which are so important in the fields of medicine and nutrition. Slowly, steadily, research has gained ground against the ravages of disease. Much has been done, but much remains to be accomplished. And only by constant application can true progress be made so that the scientist's dreams of the present may become the beneficial realities of the future. Fully aware of their heritage of responsibility, Merck research chemists will continue to work for a better tomorrow.

For Short Anesthesias

IN THE HOME, OFFICE, OR HOSPITAL

VINETHENE

Reg. U. S. Pat. Off.

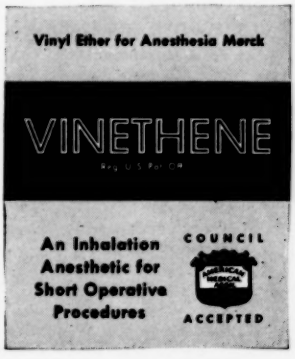
In Vinethene, physicians have at their command an inhalation anesthetic which is admirably adapted to short operative procedures in the home, office, or hospital. Vinethene anesthesia is characterized by: Rapid Induction, Prompt, Quiet Recovery, Infrequent Nausea and Vomiting.

★ ★ ★

VINETHENE *has been found of special value for:*

REDUCTION OF FRACTURES
MANIPULATION OF JOINTS
DILATION AND CURETTAGE
MYRINGOTOMY
CHANGING OF PAINFUL DRESSINGS
INCISION AND DRAINAGE OF ABSCESSES
TONSILLECTOMY
EXTRACTION OF TEETH

Literature on Request



BUY and HOLD U. S. Savings Bonds for Security

MERCK & CO., Inc. *Manufacturing Chemists* **RAHWAY, N. J.**

The Journal of the AMERICAN ASSOCIATION of NURSE ANESTHETISTS

November 1945 **Vol. 13—No. 4**

American Association of Nurse Anesthetists, Executive Office, 18 East Division Street, Chicago 10, Illinois, Phone, Whitehall 4350.

☆ ☆ ☆

Officers, 1945

President,
Hazel Blanchard
Soldiers and Sailors Memorial Hospital
Wellsboro, Pennsylvania

First Vice President,
Margaret Sullivan,
Roosevelt Hospital,
New York, New York.

Second Vice President,
Edith-Helen Holmes,
Norwegian-American Hospital,
1044 N. Francisco Ave.,
Chicago 22, Illinois.

Treasurer,
Gertrude Fife
University Hospitals,
Cleveland 6, Ohio

☆ ☆ ☆

EXECUTIVE SECRETARY—
Anne M. Campbell,
18 E. Division Street,
Chicago 10, Illinois.

☆ ☆ ☆

PUBLISHING COMMITTEE—
Edith-Helen Holmes,
Chairman
Opal Schram
Berenice Elliott

Published quarterly at 18 East Division Street, Chicago 10, Illinois, by the American Association of Nurse Anesthetists.

The American Association of Nurse Anesthetists does not hold itself responsible for any statements or opinions expressed by any contributor in any article published in its columns.

Subscription price to members, 50c per year; to non-members, $1.00 per year; single copies, 50c.

Communications concerning manuscripts or advertising should be addressed to the Editor at 18 East Division Street, Chicago 10, Illinois; those regarding subscriptions or change of address should be directed to the Executive Secretary at the same address.

Entered as second class matter May 14, 1945, at the post office at Chicago, Illinois, under the Act of March 3, 1879.

☆ ☆ ☆

MARTHA DUNLAP,
Editor and Advertising Director
5209 Kenwood Avenue Chicago 15, Illinois

NOVEMBER CONTENTS

Professional Articles:

Anesthesia Problems in Thoracic Surgery, *by J. Karl Poppe, M.D.* . 7
Cyclopropane in General Surgery, *by Marion Weigand, R.N.* . . . 17
Pentothal Sodium for Tonsillectomy, *by Mabel G. Hoffman, R.N.* . 20
Abstracts 22
Ice Anesthesia for Thigh Amputation, *reprinted from Hospitals* . . 30

News Items:

Letters From Members 35
Association News 40
Navy Nurse Cited 42
Board of Trustees Meet 43
Institute A Success 45
Additions to Membership List 47
Registration Required in New York 49

Advertisers:

Dewey and Almy Chemical Company 51
Thomas Edison, Inc. 33
Mallinckrodt Chemical Works 52
Merck and Company 3
McKesson Appliance Company 2
Ohio Chemical and Mfg. Company . . . . . Back cover
Puritan Compressed Gas Corporation . . . . . Inside front cover
Linde Air Products Company . . . . . Inside back cover
E. R. Squibb & Sons 1
Classified Advertising 39

"The inside story", from a patient's standpoint, of anesthesia, gas pains, and similar post-operative discomforts, is here viewed by Louise Peterson, drawn while a patient at McKennan Hospital, Sioux Falls, S. D. Miss Peterson is currently a medical stenographer at Cook County Hospital, Chicago.

Anesthesia Problems In Thoracic Surgery

J. KARL POPPE, M.D.
Barnes Hospitals,
St. Louis, Missouri

SINCE the opening in the chest wall seriously affects the physiology of breathing, thereby producing anesthesia problems not common to other types of surgery, this discussion is purposely limited to those types of pulmonary diseases in which the chest wall is opened. A discussion of tuberculosis is purposely omitted since tuberculosis surgery does not ordinarily require opening the chest wall, except as applied to lobectomy and pneumonectomy. However, a brief discussion of the pulmonary diseases requiring radical surgery is necessary in order to appreciate the particular problems inherent in each variety.

Bronchiectasis: Bronchiectasis is the disease most frequently treated by pulmonary resection. It consists of the dilatation of several terminal bronchi which accumulate and discharge quantities of foul pus on coughing.

Pathogenesis: Bronchiectasis may be either congenital or acquired. The congenital form is due to a malformation of the lung with either the formation of large cystic areas connected with the bronchi or partial obstruction of some of the major bronchial divisions. The cystic areas or the areas distal to the bronchial obstruction become infected following some pulmonary infection, usually in childhood, and continue to discharge pus at least intermittently during the remainder of the patient's life. The acquired form ordinarily follows some type of bronchial obstruction in which an atelectasis occurs with a collapse and pneumonitis of the section of lung distal to the point of obstruction. This obstruction may be due to an aspirated foreign body, a tumor, or a plug of mucous associated with an attack of influenza, measles, whooping cough or diphtheria. If the lung is allowed to remain collapsed for many days, pus accumulates behind the obstruction destroying part of the lung and stagnates in the bronchi until they become dilated forming large pus pockets in their terminal portions.

Symptomatology and Pathology: Cough is the universal symptom of bronchiectasis varying from an intermittent dry hacking to a continuous highly productive cough with occasionally over a quart of foul sputum daily, depending on the severity of the disease. Frequent attacks of "pneumonia" are common and blood-streaked sputum or even severe hemorrhages are

not unusual. Emesis is caused frequently, either by the vigorous paroxysms of coughing, or by the foul odor of the sputum producing nausea in even the patient himself. Marked clubbing of the finger nails is a common finding in most long standing cases of bronchiectasis.

Bronchiectatic dilatations are found primarily in the lower lobes of either one or both lungs, but may involve several lobes or segments of lobes on either or both sides. The middle lobe is frequently involved in association with the lower lobe on the right side or its homologue, the lingula of the upper lobe on the left. In far advanced and extensive cases a chronic pneumonitis and consolidation may be present, sometimes accompanied by a fibrotic contraction of the involved lobe.

Diagnosis and Treatment: Bronchiectasis may be suspected from the characteristic history of a chronic productive cough with large amounts of foul sputum for several years occurring with a gradual onset. There is also a history of frequent colds and repeated attacks of pneumonia in most cases. Tuberculosis must be ruled out by several sputum examinations for tubercle bacilli. The plain chest x-ray is usually essentially indeterminate and the final diagnosis must be made by the intratracheal injection of lipiodol. This radio opaque liquid is usually dropped directly into the pharynx or trachea under local pharyngeal anesthesia and serves to outline the diseased bronchiectatic areas by puddling of the oil in the involved lobes as distinguished from the normal portions of lung.

The only satisfactory treatment for bronchiectasis is the complete removal of the diseased portions of the lung. This is ordinarily accomplished by a lobectomy since the disease is usually confined to the lower portion of the lung. A pneumonectomy may be necessary when universal bronchiectasis is present in one whole lung. A lobectomy may be necessary on both sides in some cases of bilateral bronchiectasis, in which the two lobectomies are separated by an interval of a year or more. In some cases as many as three of the five lobes have been removed for extensive bronchiectasis. If more than three lobes are involved, the case is not suitable for surgery, but fortunately this situation is very unusual.

Lung Tumors: Bronchogenic carcinoma is the most frequent and most malignant type of lung tumor and kills about 15,000 people in the United States each year, constituting over 10 per cent of all cancer deaths. Deaths due to primary pulmonary carcinoma have more than doubled during the past thirty years. The cause for this increase is not definitely known, but may be more apparent than real, due to better diagnostic facilities and more accurate statistics during the recent years, since a surgical cure of the disease has become possible. Special attention is required to rule out secondary metastases from primary cancer in the breast, kidneys, prostate, etc., which has a tendency to appear later in the lung.

Symptomatology and Pathology: Bronchogenic carcinoma originates in the major bronchi in about 75 per cent of the cases causing an irritation resulting in a chronic dry cough as the first symptom in at least 60 per cent of the cases. This is frequently passed off as a cigarette cough thereby losing the most valuable period for successful surgery. As the tumor enlarges it par-

tially obstructs one of the major bronchi damming up secretions of pus behind it and causing an infection and productive cough, or even bronchiectasis in some cases. The bronchial obstruction may be complete, resulting in an atelectasis with chills and fever, usually diagnosed as a "pneumonia." Even this frequently does not lead to the true diagnosis until the cancer erodes a blood vessel and the patient begins to bring up fresh blood in his sputum.

By this time the tumor has frequently extended for considerable distance through the lung into the chest wall or mediastinum, making a successful complete removal of the cancer impossible. Severe pain in the chest is usually a diagnostic sign of involvement of the intercostal nerves, just as paralysis of the diaphragm or vocal cords is a sign of mediastinal involvement. The presence of a bloody pleural effusion is also evidence of extension of the cancer into the chest wall and ordinarily precludes a successful removal of the lung.

Diagnosis: Early diagnosis of bronchogenic carcinoma, while it is still in a stage to be completely removed and cured by surgery, can only be made by careful evaluation of minimal symptoms and the application of complete diagnostic facilities at that time. Any person beyond the age of 40 who has a chronic cough lasting more than six weeks should be suspected of having a bronchogenic carcinoma. A chest x-ray should be taken and tuberculosis ruled out by repeated sputum examinations. Lipiodol bronchograms and a bronchoscopic examination should be performed routinely, since it is not ordinarily the cancer but only the pneumonitis distal to the bronchial obstruction which appears on the x-ray film. About 75 per cent of the cases of bronchogenic carcinoma occur in readily accessible areas of the bronchial tree. as stated above, and can be reached with the bronchoscope. A bronchoscopic biopsy can be obtained in these cases and the diagnosis of carcinoma confirmed on pathological examination. An exploratory thoracotomy is necessary to confirm the diagnosis and at the same time remove the tumor if possible in the remaining 25 per cent. This represents a fairly formidable diagnostic procedure and is limited to those cases in which a cancer is strongly suspected. The cancer is usually found, in our experience, in about 90 per cent of the cases explored in this manner, even without a positive biopsy preoperatively.

The only satisfactory method of treating a bronchogenic carcinoma is by a pneumonectomy with the complete removal of the involved lung. This is the only means of reaching and removing the involved peribronchial lymph nodes lying deep in the mediastinum.

Mediastinal Tumors: This group of mediastinal tumors includes several different varieties occurring in different portions of the mediastinum. Dermoid cysts and lymphatic tumors originating in the region of the thymus gland and lipomas or fatty tumors tend to occur most frequently in the anterior mediastinum. Neurofibromas or nerve tumors occur more frequently in the posterior mediastinum. All of these tumors are asymptomatic during their early stages and may lie dormant for many years without growing. They do have a marked tendency to become malignant in up to 40 per cent of the cases if undisturbed over a number of years. The first symptoms appear ordinarily at the

onset of rapid growth after malignant changes have occurred and surgical removal is no longer possible. It is for this reason that any mediastinal tumor discovered accidentally on a routine chest x-ray should be removed, even though it is causing no symptoms at the time. These tumors can be removed quite easily before they become malignant by opening the chest wall directly over the tumor and ligating the pedicle. After they become malignant removal is impossible due to their rapid invasion of vital structures.

Technique of Lobectomy and Pneumonectomy: The patient is placed on his side on the operating table with the diseased side uppermost. The chest is usually opened by a posterolateral incision curving around the angle of the scapula. The entrance through the rib cage is ordinarily made in the region of the fifth or sixth rib, either by removing one of the ribs or cutting between the two ribs and perhaps transecting the posterior ends to provide more adequate exposure. The diseased lung or portion of lung is then freed from the chest wall if adhesions are present due to previous attacks of pleurisy or empyema. An individual ligation of each of the main blood vessels and the bronchial stump is customarily performed whenever the patient's condition will permit. In certain difficult or debilitated patients in whom the operation must be completed hurriedly in order to save the patient's life a "tourniquet resection" is performed. A single heavy ligature is passed around the hilus of the lung and the diseased portion cut off distal to the ligature. A considerable portion of diseased lung tissue is left inside the chest following such a procedure and the incidence of postoperative empyemas and bronchopleural fistulas through the insecurely closed bronchial stumps is greatly increased.

The pleural cavity is ordinarily drained following a lobectomy for several reasons: First, contamination of the pleura and empyemas are frequent since lobectomies are ordinarily performed for bronchiectasis with extensive infection and large amounts of pus. Second, a safety valve is necessary to prevent a tension pneumothorax or drowning in case the bronchial stump opens. Third, the remaining lung tissue on the operative side must be re-expanded as quickly as possible to prevent atelectasis and pneumonia. Fourth, the fear of producing a postoperative empyema by the introduction of infection through the drainage tube is negligible since such empyema space is rapidly obliterated by the remaining lung tissue, which expands to fill in the vacancy. A closed drainage system with a water trap valve connected to the thoracotomy tube is necessary during the first few postoperative days to maintain the negative intrapleural pressure required to re-expand the remaining lung tissue and permit respiratory motion.

No postoperative drainage is used after pneumonectomies because conditions are somewhat different from those following lobectomies: First, contamination of the pleura and postoperative empyemas are much less frequent, due to the smaller amount of infection and adhesions in cases of lung tumors for which most pneumonectomies are performed. Second, no lung tissue remains to fill in the empyema space in case of contamination through the thoracotomy tube of an otherwise clean pleural cav-

ity. If an empyema does occur, it must be drained for one year before the cavity becomes obliterated.

The Development of Intratracheal Anesthesia: The basic physiology and mechanics of respiration must be understood thoroughly before undertaking any anesthesia for intrathoracic surgery.[1] The first opening that is made in the pleura throws the normal mechanism or respiration out of control, requiring the immediate substitution of artificial assistance in respiration by the anesthetist in the closed chest. The thoracic cage expands during inspiration due to the muscular tension on the ribs and diaphragm. The only reason that the lung also expands along with the thoracic cage is the presence of a partial vacuum or negative pressure in the potential space between the lung and chest wall. The lung is not normally attached to the chest wall in any way. Whenever the vacuum seal between the lung and chest wall is broken by a large opening in the pleural space, the elastic tissue in the lung causes it to contract down to about one-third of its normal size and lose its normal respiratory function. A large portion of the exchange of air on respiratory motion takes place through the pleural opening, causing paradoxical motion of the lung and preventing a normal exchange of gasses through the trachea. The respiratory embarrassment resulting from the sudden collapse of one-half of the pulmonary tissue is further exaggerated by the partial collapse and paradoxical motion of the other half of the lung, since the mediastinum is not a solid partition between the two lungs but only a flexible substance moving readily with changes in intrapleural pressure between respirations.

This respiratory disturbance on opening the chest has greatly hampered the development of thoracic surgery until the past decade and a half when positive pressure intratracheal anesthesia has become perfected sufficiently to become a practical asset.[2] Various methods such as pressure or decompression chambers and insufflation anesthesia were employed before that time with only partial success. The pressure chamber was an airtight compartment enclosing the patient's head, and in some cases the anesthetist also, in which a positive gas pressure was maintained above the atmospheric pressure surrounding the open thorax. The decompression chamber was a similar airtight compartment large enough to contain the whole body of the patient except the head, and in some cases the entire operating team. A negative pressure was maintained in this compartment below the atmospheric pressure surrounding the head. Needless to say, such expensive and cumbersome apparatus has been abandoned in favor of more simple methods.

In 1909 the principle of insufflation anesthesia was promoted by Meltzer and Auer[3] and remained in vogue until about 1927. The air and anesthetic vapor were blown into the bronchial tree through a relatively small sized catheter passing into the trachea. The gas then escaped around the tube, thereby theoretically preventing secretions from running down into the trachea from the pharynx. This forced insufflation was said to maintain life even though no respiratory motion of the lungs was present. Further experiments, however, proved that much better oxygenation of the blood was secured if some motion of the lungs was maintained, due to improved circulation. An attempt was made to supply

this motion by means of interrupted blasts of insufflated gas with only partial success. Prolonged periods of apnea were found to follow insufflation of excessive amounts of anesthetic mixture. This was apparently due in some cases to a washing out of carbon dioxide and in others to sudden high concentrations of anesthetic being forced through the catheter. Additional difficulties consisted of the inability to accurately determine the amount of positive pressure present in the bronchial tree and the inability to suction the trachea.

The present type of inhalation intratracheal anesthesia gradually became perfected sufficiently to be practical around 1930, after which thoracic surgery began to develop rapidly to its present state[4]. This required a laryngoscope for the accurate insertion of a large, flexible, thin but stiff-walled tube with a large lumen, which could be made air tight in its contact with the pharynx or trachea. A method of applying accurately controlled positive pressure was thereby available, as well as an adequate airway for both inhalation and exhalation through the same tube. The development of a closed anesthesia system with absorption of the carbon dioxide further improved this arrangement. The large airway, affording the easy insertion of a suction catheter into the trachea, was another of the chief advantages of the inhalation method.

Application of Intratracheal Anesthesia to Daily Problems in Thoracic Surgery: One of the major problems confronting the anesthetist in over 50 per cent of the cases of intrapleural surgery is the control of the excessive bronchial secretions. This may seem an exaggeration to those experienced only in general surgical anesthesia. Infection with anywhere from a teaspoonful to a quart of sputum daily is inevitable in almost any pulmonary abnormality ranging from lung abscess and bronchiectasis to bronchogenic carcinoma and tuberculosis. These secretions are frequently so profuse that they will cause a fatality unless promptly eliminated. They are too copious to be dried up safely with atropine, without caking and obstructing the airway. If allowed to run over into the "good lung" they will cause a contralateral pneumonitis or multiple lung abscesses or a tuberculous spread, depending on the nature of the disease under treatment. If allowed to remain in the trachea the airway will become obstructed and the patient may die of suffocation. Any excess bronchial secretion should be removed by postural drainage or bronchoscopic aspiration before the anesthetic is started. This will save a great deal of trouble; especially during the induction of the anesthesia, before the intratracheal tube is inserted.

Care must be taken to avoid a very heavy dose of preoperative medication, which will suppress the cough reflex and permit an excessive accumulation of secretion preoperatively. Patients have been known to become so depressed under such circumstances that the subsequent bronchial congestion caused marked hypotension and cyanosis, requiring a postponement of any further anesthesia or surgery. The production and secretion of the pus is continuous and each respiratory cycle forces another gush out into the trachea. Almost continuous suctioning through the intratracheal tube is required throughout the entire operation. Several factors inherent in pulmonary surgery increase the bronchial congestion by squeezing

the pus out of the diseased lung. Opening the pleura causes a sudden collapse of the diseased lung as atmospheric pressure is admitted to the pleural space, resulting in a sudden and sometimes overwhelming gush of pus into the trachea. A certain amount of squeezing of the involved lung is inevitable during the process of its removal, forcing large quantities of pus into the bronchi and trachea. The unfortunate operative position with the patient lying on his healthy side does not make the anesthesia any easier, since gravity forces much of the infected bronchial secretion directly into the one remaining normal lung.

Recognizing this inevitable problem of maintaining a free airway, one must make extensive preparations preoperatively to insert as large an intratracheal tube as possible. A strong suction pump and long catheter must be available, with a lumen of sufficient diameter to permit the passage of large chunks of thick tenacious mucous, fibrin and blood clots. The greatest problems with small intratracheal tubes which do not permit adequate suctioning are encountered in children under three years of age. I believe that a preoperative trachectomy which will permit the insertion of an intratracheal tube of adequate size for satisfactory suctioning will reduce the operative mortality in very young children.

Cyclopropane is ordinarily a desirable anesthetic for pulmonary surgery due to the wide margin of oxygenation it permits. Supplementary ether is sometimes necessary under the following conditions: The insertion of the intratracheal tube preoperatively and the bronchoscopy postoperatively require extra relaxation to open the mouth widely. Very frequent suctioning in "wet cases" requires the intratracheal tube to be open almost 50 per cent of the time. Fortifying the cyclopropane with ether permits the maintenance of an even and constant anesthesia level under such conditions. A large bronchopleural fistula is created when the bronchus is transected on removing the lung. A large portion of the positive pressure and anesthetic mixture is lost for a few minutes before the bronchus is closed requiring replacement during this period of closing. This is produced by insufflation of a non inflammable anesthetic mixture such as nitrous oxide —oxygen. An absolutely motionless lung, such as provided by "controlled (apnoeic) anesthesia", seems hardly necessary but an even, quiet respiration is very much appreciated by the surgeon. A wild excursion of the diaphragm and "tugging lung" make careful surgery impossible. An obstruction of a bronchus must be considered and treated by aspiration or readjustment of the intratracheal tube or even bronchoscopy in case a satisfactory level of anesthesia can not be obtained after a reasonable period. Intratracheal suctioning frequently produces a convulsive motion of the diaphragm, at which time the surgeon should be warned, lest he should be handling a major vessel at that moment.

The amount of positive pressure ordinarily required throughout an intrapleural procedure is negligible, amounting to only a couple of millimeters of mercury. A little more pressure may be necessary as the chest is opened to counteract the sudden collapse of the lung associated with the change in intrapleural pressure from negative to atmospheric. A little positive pressure up to six or eight millimeters of mer-

cury is occasionally required, as requested by the surgeon, to test or identify a particular bronchus. A similar period of slightly positive pressure is required at the close of the procedure to re-expand the remaining collapsed lung tissue before closing the chest wall. The positive pressure should be abandoned in case the lung does not re-expand readily, since this infers an obstructed bronchus which can be corrected much better by suction rather than pressure. A safety valve appliance adjusted to a maximum pressure of ten millimeters of mercury should be connected in series with any positive pressure anesthesia circuit. A positive pressure of over ten millimeters of mercury is capable of rupturing pulmonary alveoli and causing mediastinal emphysema or pneumothorax, as well as reducing the blood pressure in direct relation to the pressure applied.

Let us now reconsider a few of the emergency problems from the immediate viewpoint of the person administering the anesthetic and watching the physical signs. A sudden cessation of respiratory motion may be due to several possibilities. It may be reflex in nature, as when the pleural space is suddenly opened, and can be controlled by asking the surgeon to close the incision for a few minutes until normal respirations are resumed. It may also be due to a sudden obstruction of the airway by pus or blood. This is not necessarily preceded by gurgling or strenuous respiratory efforts, although it is usually followed by cyanosis. Immediate intratracheal suctioning should be attempted and if this is not rapidly successful in removing the obstruction a bronchoscopic aspiration should be requested. This must be done rapidly because the heart will stop beating within a few minutes after such an obstruction. The other possibilities of respiratory arrest are those well known to anesthetists, such as administration of a strong anesthetic mixture forced quickly, reflex apnea from pain stimuli by reason of a too light zone of anesthesia, etc. In any case it is wise to request the surgeon to cease operation until the normal respiratory rate is resumed.

A sudden drop in the blood pressure should also be called to the surgeon's attention immediately and the cause investigated. It is frequently due to an obstruction of the airway requiring suctioning, bronchoscopy or a readjustment of the intratracheal tube. It may also be due to a reflex reaction caused by the surgeon's pulling on the hilar structures. In this case it will quickly correct itself when the surgeon is asked to release the tension. A drop in blood pressure is a well recognized sign of shock following blood loss. The operative procedure should be temporarily stopped at this point if possible, until the intravenous fluids and transfusions have had a chance to at least partially replace the blood loss. The falling pressure may also be a sign of exhaustion of the patient, suggesting the desirability of completing the operation as soon as possible.

Lung Abscess: The term lung abscess refers to an actual destruction of pulmonary tissue as a result of a nonspecific necrotizing pneumonitis. It is to be distinguished from tuberculous cavitation, which is specific in etiology and much different in its clinical and pathological behavior.

Etiology: Lung abscesses can be divided into two general groups in regard to etiology: (1) those due to the aspiration of infected material from the oral cavity, and (2) those due to blood-borne

material lodging in the lungs as septic emboli. These first produce infarction and later liquefy to form abscesses. A great majority of putrid lung abscess cases (as high as 80 per cent in some series) had marked pyorrhea and dental infection. Over 50 per cent of lung abscess cases give a history of tonsillectomy or dental extraction immediately preceding the onset of the abscess. These are usually done under general anesthesia, but frequently under local anesthesia. It is estimated that one case out of every 2,500 tonsillectomies develops a lung abscess. Aspiration of foreign bodies, such as peanuts, tacks, hairpins, etc., also account for a certain number of lung abscesses.

Symptomatology and Pathology: The majority of lung abscesses begin in the smaller bronchi at the periphery of the lung where the infected material becomes lodged. The early picture is one of pneumonitis occurring within a few days after the oral operation and accompanied by chills and fever. This continues for about two or three weeks, after which the patient begins to cough up large quantities of foul sputum and the fever begins to subside. At this time an area of necrotizing destruction of the lung occurs with liquefaction of the destroyed lung tissue which is drained through the bronchi in some cases. In other cases the necrotic material does not drain well through the bronchi and the fever continues. Numerous anaerobic organisms are found in the sputum, including: anaerobic streptococci, staphylococci, fusiform bacilli and spirillae.

Diagnosis and Treatment: The diagnosis of a lung abscess can usually be made on the typical history and the presence of an area of rarefaction with a fluid level located in the periphery of the lung and surrounded by a zone of pneumonitis. A tuberculous cavitation, congenital pulmonary cyst and bronchogenic carcinoma with abscess formation must be ruled out in each case and especially in the atypical cases by sputum examination, bronchoscopy, etc. A spontaneous cure can be expected in about 30 per cent of lung abscesses with only bronchoscopic aspiration or conservative therapy during the first six weeks. For this reason any attempt at radical surgery should be postponed until at least six weeks after the onset to allow all possible chance for a spontaneous cure. External drainage of the abscess should be considered if internal drainage through the bronchi has not been accomplished by this time. This drainage should be performed as a cautery pneumonotomy, and the acute toxic symptoms and anaerobic infection allowed to completely subside before permitting the external opening to close. A lobectomy is sometimes necessary in case a large section of lung tissue has been permanently destroyed by the infection and refuses to fill in the cavity by granulation tissue. The lobectomy should be postponed for at least a year to allow maximum healing and subsidence of the acute infection.

Cautery Pneumonotomy Drainage of Lung Abscess: The drainage site for a lung abscess should be directly over the abscess cavity as determined by x-ray films taken at different angles. The chest wall is opened and segments of the overlying ribs removed, exposing the pleura. In case adhesions are not present at this site to bind the diseased portion of lung to the chest wall, the operative incision should be packed with gauze to promote a sterile inflammatory reaction in the pleural space and prevent an empyema from forming as a result of the drainage. The gauze

pack is left in place for a week or more and the drainage temporarily postponed. After the pleural space has become obliterated at the second stage operation an actual cautery in the form of a hot soldering iron is used to burn through the thin layer of lung tissue overlying the abscess cavity and unroof the cavity, permitting adequate drainage. A bronchopleurocutaneous fistula is thereby created, which is packed with gauze and gradually allowed to granulate over a period of several months by which time the cavity is obliterated and the defect completely healed.

The anesthetic problem associated with the drainage of a lung abscess is complicated by several factors. First, no inflammable anesthetic is permissible in view of the red hot cautery being inserted into the lung. Second, the anesthetic plane must be kept relatively light due to the strong probability of the bronchial tree being flooded with blood and pus when the abscess cavity is suddenly opened and the patient inhales the contents of the cavity through the bronchopleural fistula. Unless the cough reflex is maintained throughout and the pus can be expelled from the bronchial tree by the patient suffocation is imminent. Third, some type of general anesthesia is desirable to allay the apprehension of the patient when he begins to blow blood, pus and smoke out of his mouth in certain cases of lung abscesses.

These various problems can be controlled by several means. First, by using only preoperative medication and local anesthesia to control the patient sufficiently so that nitrous oxide inhalations will be adequate to allay anxiety and still maintain the cough reflex. Second, by placing the patient in a high Fowler's position on the operating table to permit pus to drain out through the operative incision instead of through the bronchopleural fistula into the opposite lung. Even under these circumstances a cessation of breathing may occur, which will require intratracheal suctioning or bronchoscopic aspiration to clear the airway and permit exchange of oxygen.

The most frequent postoperative complications of a cautery pneumonotomy drainage of a lung abscess are: Extensive pneumonias, cerebral abscesses and severe hemorrhages from erosion of blood vessels around the infected area. Any one of these complications is frequently fatal, which makes the procedure a formidable one. The prospect of recovering from an undrained lung abscess after it has passed the acute stage is so poor that surgical drainage is indicated despite the difficulties.

REFERENCES

1. Graham, E. A. and Poppe, J. K.: *Physiological Aspects of the Lungs of Importance to the Surgeon.* Lewis' Practice of Surgery 4: Chapt. 9.
2. Gillespie, Noel A.: *Endotracheal Anesthesia,* University of Wisconsin Press, 1941.
3. Meltzer, S. J. and Auer, J.: *Continuous Respiration Without Respiratory Movements.* J. Exper. Med. 11:622, 1909.
4. Flagg, P. J.: *Intratracheal Inhalation Anesthesia,* Review of 10 years experience. Arch. Otolargny. 25:405 1937.

* * *

In the July 14 issue of The New Yorker magazine there is a thumb-nail sketch describing the maritime province of Fukien, on the China coast. It includes this statement: "As early as 300 B.C. the Fukienese, supposedly, knew the secret of anesthesia. They are said to have used a jasmine-root extract which kept a person under for as long as two days."

Cyclopropane in General Surgery

MARION WEIGAND, R. N.,
James Decker Munson Hospital
Traverse City, Michigan.

SOME outstanding facts have come to my attention in using cyclopropane in general surgery, which I shall review.

In the mind of the patient, the anesthetic plays a major part in the fear of surgery, in my own belief. Our surgeons have had many requests from patients for cyclopropane anesthesia. Frequently, I have heard these surgeons explaining the merits of this agent to allay the fears of their patients.

I have come to regard cyclopropane as the "surgeon's choice" in our hospital because, while trying to push other anesthetics, and thus remain efficient in all types, cyclopropane was used in 85 per cent of all cases and in 43 per cent of the cases it was used alone. This includes patients from 9 months to 85 years of age. The advantages to the surgeon include the rapidity of induction, adequate relaxation and rapid recovery with a minimum of harmful effects. To the patient the ease of induction with ease of recovery is paramount.

Read at the meeting of the Michigan State Association of Nurse Anesthetists, February 17, 1945, at Detroit, Michigan.

Cyclopropane has been used alone for hysterectomy, Caesarian section, nephrectomy, fusions of the shoulder and hip, insertion of Smith Peterson nail and many other minor and major cases, some lasting as long as three hours with a minimum of shock. In every major case preventive treatment is given with an intravenous injection of 5 per cent dextrose in distilled water being started before the incision is made. Whenever indicated whole blood is also given during the surgery.

I believe the most significant factor in obtaining successful cyclopropane anesthesia is the preparation of the patient. This is equally important to the surgeon, the anesthetist and the patient. In the age group from 9 months to 4 years cyclopropane was given in several instances for induction only, switching to drop ether for the remainder of the anesthetic. In this age group the preliminary hypodermic used varied from 1/300 grain atropine alone to ¼ to ½ grain codeine with 1/200 atropine. In children from 4 to 12 years of age cyclopropane alone or with the addition of ether or nitrous oxide was routinely used with a preliminary hypodermic of ½ to ¾ grain codeine with 1/200 grain

atropine. Twenty per cent nitrous oxide is sometimes added to the anesthetic mixture to stimulate respiration. We feel that the use of cyclopropane induction creates less fear of a surgical procedure, especially in children for orthopedic operations where the surgery may be multiple. Cyclopropane anesthesia causes less post-operative nausea and vomiting, thus reducing post-operative nursing care.

Above 12 years of age morphine and hyoscine were used as premedication as indicated by the age and weight of the patient. In the aged patient atropine was used instead of hyoscine, because we think it causes less post-operative mental confusion. In adults a barbiturate such as nembutal or seconal grain 1½ is given the night before and again in the morning if surgery is delayed. The pre-operative hypnotic is given preferably one hour before surgery in adults and one-half hour before surgery in young children.

This procedure is varied in two instances: in thyroidectomy and Caesarian section. In thyroidectomy, in a toxic patient, using steal technique, a light premedication of morphine ⅛ or 1/6 grain plus 1/150 grain hyoscine is given one hour before surgery, plus the addition of avertin @ 80 mgm. one-half hour before surgery. After being moved to the operating room cyclopropane is started in the usual manner using a very light mixture and given throughout. We have had very few patients who remember going to the operating room when using this method, and the patients react a few minutes after returning to their room. We feel that the amnesia is produced by both the hyoscine and avertin and that the oxygen content of the cyclopropane mixture is an asset to the post-operative condition of the patient. For a non-toxic thyroidectomy we give the usual adult dosage for premedication and anesthesia.

In Caesarian section the only preparation used is hyoscine grain 1/150, given three-fourth hour before surgery. At the time the abdomen is prepared and the surgeon ready to make the incision, morphine grain ¼ is given. We have had no difficulty with the babies while using this procedure, all having cried spontaneously.

During the past year I have had only two or three adults in whom cyclopropane anesthesia could not be carried beyond induction because of a rapid rise in pulse rate, combined with the inability to obtain relaxation. These cases were all emergency appendectomies and I believe the cause was inadequate preparation. In all instances I was able to switch to nitrous oxide and ether and maintain normal anesthesia. I believe, however, that even in these cases, the cyclopropane induction was of value to the patient because of the ease with which they reached unconsciousness.

One rather unusual case coming to our attention was that of a patient 43 years of age, scheduled for a subastragloid fusion of the ankle with plaster cast. On routine physical examination he was found to have a pulse which varied from 40 to 60 with an average reading of 48 most of the time. All other findings were negative and the patient was apparently well and normal. Surgery was cancelled until a more thorough investigation of the heart could be done. An electrocardiogram was taken and found to be normal, with no evidence of myocardial damage. It was decided that this pulse rate was normal for this individual and surgery was again scheduled.

The surgeon wanted a cyclopropane anesthetic, as this had been advised by the physician who examined the heart, and I endeavored to give it. The premedication given was morphine grain ¼ and hyoscine grain 1/150 one hour before surgery. The pulse rate was 48 when the anesthetic was started, dropped to 30 in the first 5 minutes and varied between 30 and 40 for the one hour and 25 minutes of anesthesia. The blood pressure and respiration were normal throughout. The agents given were small amounts of cyclopropane combined with the addition of 20 per cent nitrous oxide to the mixture at times plus 3 cc of ether. The patient reacted soon after being returned to his bed with no seeming ill effects. The recovery was uneventful and the patient was dismissed on his 36th day in the hospital with a recorded pulse rate of 48.

We feel that cyclopropane is one of our most controllable anesthetic agents; is tolerated well by all age groups, and can be given in most instances where the patient can tolerate a general anesthetic. Hypertension cases are an exception, where even a slight rise in blood pressure might be disastrous.

We use cyclopropane routinely for supplemental anesthesia with spinal, sodium pentothal, avertin or local anesthesia if no explosive hazards are present. Intravenous solution and whole blood should be used to prevent shock. A free airway should be maintained using suction, when necessary. Helium is always added to the anesthetic mixture and the usual explosion preventive measures are used routinely. As in any other anesthetic better results are obtained if the patient is given proper and adequate preparation and comes to surgery in the best physical and mental condition.

* * *

A current newspaper article appearing in The Chicago Tribune, reports on the new use of curare, which is quoted here, in part:

"Curare, once a secret poison South American Indians used on deadly arrows shot from blow guns, has been brought to Chicago. A spokesman for the Chicago health department disclosed last night that within a few days the lethal substance, in a purified form known as intercostin, will be employed in the Contagious Disease hospital to relieve the dreadful muscle spasm pain caused by infantile paralysis.

"The drug, said to have been smuggled out of Venezuela only a few years ago by an American explorer, is extracted from a tropical tree of the nightshade family. It contains two alkaloids capable of paralyzing the heart and motor nerve endings. In infantile paralysis, it is given by mouth or administered in minute amounts through hypodermic injection into the muscles.

"In infantile paralysis, the drug produces a relaxation of the muscles which, the health department representative explained, would prove invaluable in saving from possible death and long confinement in a respirator those polio victims whose lung muscles become paralyzed."

* * *

"Kreiselman Resuscitators and Bassinets" is the title of a new 20 page booklet just published by The Ohio Chemical & Mfg. Co. This booklet illustrates and describes the complete line of resuscitation apparatus designed by Dr. Kreiselman and manufactured by the Heidbrink Division of The Ohio Chemical & Mfg. Co. Copies are available on request to the company at 745 Hanna Bldg. or any of the branches of the company.

Pentothal Sodium or Balanced Anesthesia for Tonsillectomy Operation

MABEL G. HOFFMAN, R N.,
Nason Hospital,
Roaring Spring, Pa.

FOR those who have thought with trepidation of using Pentothal Sodium as a general anesthetic for tonsillectomies, I would like to submit the following method which I have used in a hundred cases, and which for me has proven the most ideal general anesthetic to date.

When I first began using Pentothal for tonsillectomies, I used it just for induction, and then switched to the usual method of ether anesthesia. This proved unsatisfactory as it took much longer to reach the stage of surgical anesthesia than it did without the Pentothal. Then I tried using just the Pentothal Sodium. To me, this also proved unsatisfactory as it was necessary to give a very large amount of Pentothal to abolish throat reflexes and there was more danger of respiratory depression. The outcome of these experiments is the following method.

For this method, it is necessary to have a gas machine to which an ether hook can be attached. One ounce of ether to which 10 cc of Vinethene has been added is placed in the ether container. Pentothal 1.0 gm. is made up as a 2½ per cent solution. A syringe holder and two-way stop cock outfit is used. The ten cc syringe is filled with the 2½ per cent solution and the Pentothal is given slowly intravenously until the patient reaches the stage of unconsciousness. Usually it is necessary to give from 8 to 10 cc to reach this stage.

The nitrous oxide plus oxygen is started. The per cent of the mixture is dependent on the oxygen requirement of the patient. The ether is gradually turned on so that the ether bubbles are just discernible. At this time, a sufficient amount of distilled water is added to the Pentothal solution to replace the amount already used. From time to time, more distilled water is added to make the solution progressively weaker. The advantage if this weaker solution is a smoother control of the anesthetic; for once the desired plane has been reached, it requires only a small amount of pentothal to maintain it.

When the jaw muscles are relaxed, the mouth gag is inserted and the patient is ready for the operation. If there is still any throat reflex, 1 or 2 cc. of pentothal solution will correct it immediately.

The patients should have been given a small dose of opiate and Atropine preoperatively at least a half hour or forty-five minutes before operation, so that the opiate is at the height of its

action before the pentothal is started.

In a series of one hundred cases, only three anesthetics were not what could be called ideal. It was necessary to give larger doses of pentothal, but in spite of this, the patients were not well relaxed. In one of these, the patient had a persistent cough reflex which I believe was due to the ether being turned on in too high a concentration of vapor. In only one case was there a respiratory depression. This was a sixteen year old boy who's sedative had been given just prior to surgery, through oversight. The depression was corrected by giving picrotoxin 2 cc intravenously, plus oxygen.

The advantages of this method are: (1) Ease of induction; (2) Depth of anesthesia easily controlled; (3) Excellent relaxation of the jaw; (4) The amount of ether is reduced to no more than 30 cc; (5) Reduction of nausea and vomiting to a minimum; (6) Shorter reaction time than with drop ether.

ORDER BLANK

AMERICAN ASSOCIATION OF NURSE ANESTHETISTS

OFFICIAL EMBLEM

If pin is desired, please fill out this form and mail with remittance to:

Gold Filled
Price—$4.00
(includes mailing)

American Association of Nurse Anesthetists
18 East Division Street, Chicago 10, Illinois.

NAME .....

STREET ADDRESS .....

CITY ..... STATE .....

HOSPITAL .....

ABSTRACTS

It is the aim of this department to bring before readers recent publications which we believe are of practical value to the nurse anesthetist. We shall also call to your attention articles not so recently published that are of lasting interest. Some articles will be merely listed; others will be abstracted. Wherever practical abstracting will be done by the use of direct quotations. Contributions and suggestions will be most welcome by the members of the Publishing Committee, who are responsible for the compilation of this material.

TITLE: Pentothal Anesthesia

AUTHOR: Captain Edward Damarjian

PUBLICATION: *Anesthesiology*, Vol. 6, No. 4, July, 1945

ABSTRACTOR: Opal M. Schram, R. N.

"Military surgery has of necessity stressed the importance of pentothal anesthesia. . . .

"We have had the opportunity in an Evacuation Hospital to administer pentothal anesthesia to more than 400 patients. . . . Of this series, detailed records were kept on 200 consecutive cases, tabulating the preoperative medication, amount of pentothal used, and whether used alone or as a "combined anesthesia." From these statistics evaluations were made as to the ideal methods of administering pentothal under varied conditions.

"Only a 2.5 per cent solution of pentothal was used. . . .

"In a previous paper it was pointed out that the amount of pentothal given was based on relative, gross movements of the patient rather than on any signs of anesthesia. However, it is now felt that two valuable reflex signs, the eyelid and the corneal reflexes, should also be used by the anesthetist when administering the drug. The former is used during induction of anesthesia, giving repeated 1 cc. doses of pentothal slowly until the eyelid reflex is abolished. With the injection of an additional 2 cc. of the drug the patient is sufficiently anesthetized for the surgeon to do anything that does not require that the deeper reflexes be abolished. For deeper anesthesia the drug is continued, and an additional 2 cc. is given after continuation of the anesthesia has abolished the corneal reflexes. . . . However, once the desired level of anesthesia is reached it was necessary to use gross movements in conjunction with these reflex signs to determine the need for additional injection of the drug, because it was found that repeated attempts to elicit these reflexes occasionally placed them in a refractory state. . . . It must be borne in mind that it is far better to administer light pentothal anesthesia and exert some physical restraint of the patient's movements for such a simple surgical procedure as incision and drainage of an abscess than to administer sufficient drug so that the patient is absolutely quiet.

"An accurate account of the amount of the drug used was tabulated in 200 consecutive cases:

1. the number of cubic centimeters of the solution required for each induction, that is, from the time the drug was started until the patient's eyelid reflexes were abolished. . . .

2. the time it took for the induction. . . .
3. the total volume of the drug required for the anesthesia. . . .
4. and the total time required. . . .

"We have attempted to apply these calculations in various situations. . . . First we varied the preoperative medication, using atropine and morphine, atropine alone, and then no preoperative medication. Secondly, we varied the state of the pentothal solution, using a freshly prepared solution, a stale solution (three days in solution), old solution (over three days in solution), a warmed solution (body temperature) and an ice cold solution of the drug. Thirdly, during the maintenance period of anesthesia we used oxygen, 50 per cent nitrous oxide, nitrous oxide and intravenous saline solution and brachial block plus pentothal. Lastly, we compared the maintenance rate of pentothal (cc/min.) in those cases which required the least amount of the drug for the original induction, to the rate in those cases which required larger amounts for induction. In other words, our problem was to determine whether or not a patient subsequently took less pentothal during his maintenance period if the original induction dose of the drug was also small.

"The original induction dose of pentothal was tabulated in 100 consecutive cases using as a preoperative medication, morphine, grain 1/6 (Gm. .011) and atropine, grain 1/150 (Gm. .0004). Using the volume of pentothal solution as a criterion, it was found that the series for induction could be arbitrarily divided into three groups:

"(a) Group I—those cases that required from 2 to 11 cc. of solution for induction.

"(b) Group II—those cases that required from 12 to 17 cc. of solution for induction.

"(c) Group III—those cases that required from 18 to 25 cc. of solution for induction.

"It was then noted that 51 per cent of the cases fell into Group I, 35 per cent into Group II, and only 14 per cent into Group III. In Group I the average volume required was 7.4 cc., in Group II 15.3 cc., and in Group III 22.2 cc. We could usually judge, from the rapidity with which the patient began to show effects of the pentothal solution into which group he would fall. In another 50 cases anesthesia was induced with atropine, grain 1/100, (Gm. .0006) as the only premedication. Of these 50 cases, it was noted that 80 per cent fell into Group II, that is, an induction dosage between 12 to 17 cc.

"It is evident, therefore, that the patients who used the least amount of pentothal for induction were those who received morphine for premedication. . . .

"The maintenance dose was recorded in cc/min. and included the interval from the time the patient first lost his eyelid reflexes to the time they reappeared (or such time that the patient made any involuntary movements suggesting that he had begun to recover from light pentothal anesthesia).

"In the cases in Group I, the maintenance dose was 0.88 cc/min. and in Group II the maintenance dose was 1.04 cc/min. Since their difference is so slight, it is evident that the initial induction dosage of pentothal had no definite effect on the maintenance dosage of the drug. . . . In the series of 50 cases in which morphine was not used preoperatively, the maintenance dose of pentothal was 1.44 cc/min.

"In another series of 50 cases in which 50 per cent nitrous oxide and oxygen was used in the maintenance period, the maintenance dosage was only 0.44 cc/min.

"In an additional small series of cases in which brachial block was done in addition to administering 50 per cent nitrous oxide and oxygen, the maintenance dose was 0.29 cc/min. . . .

"The age of the solution had no effect on the dosage for induction, the maintenance rate or the postanesthetic recovery as compared to a fresh solution. . . .

"In the previously prepared solutions, it was necessary to keep the solution in the refrigerator; otherwise it showed a white precipitate within ten days. . . .

"It was difficult to evaluate each patient's postanesthetic recovery of consciousness because the tendency was to continue to sleep even after the anesthesia had worn off. . . . It should be stressed, finally, that for civilian practice, intravenous pentothal is not recommended for an office procedure because one is not able to foretell into which induction group the patient will fall and as a result, the patient may be semiconscious for several hours.

Summary

"Intravenous pentothal is a valuable and safe anesthetic in experienced hands. I have attempted to show the following:

"1. The induction dosage is variable and has no direct relation to the amount required for maintenance of the anesthesia.

"2. Both the induction and maintenance requirements are diminished with morphine, nitrous oxide and block anesthesia. . . .

"3. The temperature of the solution had no effect on the anesthesia. Solutions which had been stored for some time after preparation were as effective as freshly prepared solutions, and were used without apparent harmful effects."

TITLE: Peripheral Circulatory Reactions as a Basis for Evaluating Anesthetic Agents

AUTHOR: S. G. Hershey, M.D., B. W. Zweifach, Ph.D., R. Chambers, Ph.D., and E. A. Rovenstine, M.D.

PUBLICATION: *Anesthesiology,* Vol. 6, No. 4—July, 1945

ABSTRACTOR: Opal M. Schram, R. N.

"Surgeons and anesthetists, from their clinical experience, have long been aware of the significance of anesthesia in the maintenance of vasomotor circulatory adjustments during operative procedures. Even under the most favorable conditions, the physiologic effects of anesthesia, when superimposed on those of trauma and blood loss, are essentially undesirable. The numerous discussions of the proper anesthetic control of the shocked patient testify both to the variable influence anesthetic agents can exert and to the inadequacy of the available data dictating the selections of such agents. . . .

ETHER: "Clinicians have agreed, for a long time, that ether does not afford the shocked patient a wide margin of safety. This conviction has been repeatedly confirmed in the laboratory. Ether tends to produce acidemia, fluid imbalance, interference with carbohydrate metabolism, and of itself brings about many of the circulatory disturbances characteristic of shock. Patients undergoing long surgical pro-

cedures during ether anesthesia frequently develop a cool, moist skin exhibiting an uneven patchy pallor. Often, they do not look normal despite comparatively high blood pressures; they withstand further blood loss poorly and their response to transfusion is delayed and inadequate. . . .

CYCLOPROPANE: "Cyclopropane, since its introduction, has achieved wide clinical usage and has been subjected to extensive laboratory investigation. After some years of clinical observation, there has been established here the conviction that this agent affords the shocked patient, especially one who had suffered hemorrhage, a wider margin of safety than other drugs used for general anesthesia. Numerous instances have demonstrated that anesthesia with this agent need not await shock therapy but that both may proceed simultaneously with no apparent detriment to the individual. During long operative procedures with cyclopropane, the patient's skin usually remained warm with good color. When pallor was evident, the skin was evenly blanched and did not present the uneven coloration seen during hemorrhage with ether anesthesia. Laboratory evidence suggests that metabolic and functional effects of cyclopropane are relatively innocuous, with the exception of its sensitization of cardiac automatic tissue. . . .

"Recent experimental studies in traumatic and hemorrhage shock are unanimous in concluding that cyclopropane provides a wider margin of safety and less interference with compensatory mechanisms than any other anesthetic agent used. The most striking difference between dogs given ether and cyclopropane was the ability of the latter to maintain an efficient peripheral circulation with little or no impairment of its vasomotor adjustment mechanisms. Animals so narcotized withstood more severe hemorrhage when compared with those given ether or pentothal. They responded better to transfusion and showed better capillary blood flow at comparable levels of hypotension. Vasodepressor substances could not be detected in the blood of any of these animals. The circulatory dynamics during cyclopropane anesthesia, both before and after hemorrhage, most closely resembled those seen in unanesthetized dogs. . . .

PENTOTHAL: "Pentothal has received extensive clinical application. Most qualified observers agree that great caution must be exercised when pentothal is used in circumstances of shock or hemorrhage, perhaps indicating a narrow margin of safety for such patients. Because of its singular adaptability and ease of administration, its clinical use has far outstripped similar laboratory studies. This drug in anesthetic doses seriously disturbs the normal reflex respiratory mechanism, and in hemorrhage exhibits an unpredictable circulatory depressant action. . . .

CONCLUSION: "The profound effects exerted by anesthetic agents on the circulation, especially the peripheral vascular bed, make this aspect of the problem of extreme importance in surgical procedures where the limits of circulatory adjustment are often the decisive factor. . . .

"Ether, by dampening the compensatory responses in the capillary bed, is to be avoided in circumstances of hemorrhage. Cyclopropane, not exerting the undesirable hemo-dynamic effects of ether, seems much better suited for such operative conditions. Pentothal, having effects between cyclopropane and ether, has limited safety. Its most striking feature is the unpredictability

of its influence on the capillary circulation. Much more laboratory information is needed about this drug to evaluate it properly."

AUTHOR: R. J. WHITACRE, M.D., and A. J. FISHER, M.D.
TITLE: Clinical Observations On the Use of Curare in Anesthesia.
PUBLICATION: *Anesthesiology*, March, 1945, Volume 6, Number 2.

"The use of curare in conjunction with general anesthesia to improve muscular relaxation was first reported in this journal by Griffith and Johnson. They found that when sufficient relaxation could not be obtained with inhalation anesthesia, 100 mg. of curare (Intocostrin-Squibb) would immediately produce profound relaxation for a short time. More than 100 mg. of curare was rarely required. When it was used in conjunction with cyclopropane, undesirable reactions were not observed. . . .

"Cullen reported favorably on the use of curare and stated that the principal disadvantage of curare is the narrow margin between abdominal relaxation and respiratory depression. In many cases when sufficient curare was given to relax the abdominal muscles, a degree of respiratory paralysis occurred that required artificial pulmonary ventilation. Cullen noted that when curare was used with ether anesthesia, it was necessary to reduce the dose of curare. . . . In the presence of deep ether anesthesia, even small doses of curare may cause severe circulatory reactions. The intravenous injection of 20 mg. of curare in one patient in the third plane of ether anesthesia caused complete peripheral circulatory failure . . . If sufficient ether has been given to produce third plane anesthesia and the relaxation is still unsatisfactory, it is probably unwise to use curare.

"We have used curare for the most part to supplement cyclopropane anesthesia. Circulatory depression was not observed with this combination if the patients were well oxygenated at all times. When it was necessary to obtain muscular relaxation very quickly, 100 mg. of curare was given intravenously. This promptly provided good relaxation in most cases; however, varying degrees of respiratory depression occurred which often required artificial respiration . . . When adequate relaxation was once obtained, additional doses of 20 mg. were given as required. When more time was available for the production of relaxation an initial dose of 20 mg. of curare was given immediately after the induction with cyclopropane, and then repeated every five minutes until the desired degree of muscular paralysis was obtained. The depth of cyclopropane anesthesia was maintained in the lower part of the first plane. The incidence of complications was minimized by the administration of curare in small divided doses and by limiting the total quantity of 100 to 150 mg. . . .

"When sufficient curare is given to paralyze the muscles of the larynx, foreign material may be aspirated into the lungs unless definite precautions, such as the use of an endotracheal tube, are taken . . . The advisability of using an endotracheal tube should always be considered when curare is given to patients who are likely to vomit or regurgitate stomach contents.

"West has called attention to the occurrence and danger of respiratory

spasms during the administration of curare. We have noted this complication in several cases when inadequate general anesthesia was used and when the amount of curare was insufficient to cause complete paralysis of the skeletal muscles . . . When respiratory spasms occur, it is necessary either to increase the depth of anesthesia, or to give additional curare to relax the muscles and permit inflation of the lungs. If the muscles of respiration are not relaxed, attempting to inflate the lungs may force gas into the stomach. This results in a dilated stomach which may embarrass the work of the surgeon. Forceful distention of the stomach may also cause an unexpected regurgitation of stomach contents . . . When the dose of curare is limited and when the general anesthesia is adequate, muscular spasms have not been observed.

"We have used curare with very satisfactory results in conjunction with spinal-cyclopropane anesthesia to improve or prolong abdominal relaxation . . . Ordinarily, whenever there is evidence of inadequate spinal anesthesia, or when it is wearing off too soon, 20 mg. doses of curare are given and then repeated every five minutes until the desired effect is obtained. The use of curare in this fashion has decreased the necessity of using the continuous spinal technic in many of our cases.

"In our experience curare has not displaced the ordinary methods of producing relaxation for routine intra-abdominal operations. The conservative use of curare as a method of improving relaxation, particularly when used in conjunction with cyclopropane, has been advantageous in some instances. The combination of curare and cyclopropane causes very little circulatory depression even in poor risk patients if they are well oxygenated at all times. Although many patients tolerate relatively large doses of curare, we have observed fewer complications when it is given in small divided doses and when the total quantity of drug is limited to 100 to 150 mg. In the average case, doses of 20 mg., repeated at five minute intervals until the desired effect is obtained, have been a satisfactory method of administering curare.

"When large doses of curare were used certain complications were observed . . . The introduction of curare into clinical anesthesia is another step in the progress of anesthesiology . . . At the present time there is reason to believe that the cautious use of curare in conjunction with other agents will prove to be valuable in selected cases."

TITLE: Comparison of Single and Double Doses of Morphine Sulfate as Preanesthetic Medication

AUTHOR: Captain Irving E. Goldberg, M. C.

PUBLICATION: *Anesthesia and Analgesia,* July-August 1945 —Vol. 24, No. 4

ABSTRACTOR: Opal M. Schram, R. N.

"For the past twenty years, it has been a common practice among many anesthetists and surgeons to give patients premedication with double doses of morphine, one and two hours preoperatively. With these double doses of morphine premedication, it was believed that surgery could be performed using ethylene gas in combination with oxygen as the sole anesthetic agent. . . .

"The study was undertaken for comparison of single and double doses of morphine sulfate in their effect on the

patient before, during and after operation. Special effort was made to observe and record the sedative effect on the patient prior to operation, ease of induction and maintenance of anesthesia, anesthetic complications, and postoperative course.

"A series of 141 surgical cases, all performed by the same group of surgeons, and the anesthesia administered by the same group of resident anesthetists, was studied.

"Double doses of morphine sulfate (usually gr. 1/6) were administered in 50 of these cases. Ninety-one patients received only a single dose of morphine preoperatively, and were considered as controls.

"All cases received a simultaneous dose of either scopolamine or atropine in the ratio of 1:25 to the morphine administered. . . .

"In nearly all the lower abdominal cases (25 out of 30) in which a double dose of morphine was given and anesthesia was begun with ethylene-oxygen, eventually ether had to be employed. The anesthetists had much difficulty with these cases. More than half of them came to operation too depressed, and as soon as the ethylene-oxygen mixture was introduced, they stopped breathing. Ether was then employed to stimulate respiration through its irritant effect on the respiratory system. . . .

"On other occasions, when ether was added to the ethylene-oxygen mixture to obtain more adequate relaxation, the depression induced by the morphine was enhanced by the ether, and resulted in arrest of respiration. It was with great difficulty that adequate depth of anesthesia could be attained to continue the operation.

"In surgery from a vaginal approach where less relaxation was required, and where there was less peritoneal stimulation, the results with the double doses of morphine and ethylene-oxygen anesthesia were better. Nearly half the cases of double morphine dosage were carried under the ethylene-oxygen mixture alone; only one-quarter of the single dosage cases could be carried under the ethylene-oxygen mixture, the rest required the addition of either ether or cyclopropane. However, even here, anesthetic difficulties were still much greater than with the single dose of morphine preoperatively. . . .

"Surprisingly, there was as much or more apprehension at induction following the double doses of morphine as there was after the single doses, 10 per cent following the double doses, 4.5 per cent following the single doses. With the double doses more than 50 per cent of the patients came to operation too depressed, while with the single doses only 3 per cent were too depressed.

"Anesthetic complications such as laryngospasm, and excessive depression either at induction or throughout the operation, occurred in 8 of the 91 cases, or 9 per cent, given a single dose of morphine preoperatively. With the double doses, 42 complications in 50 cases, or 84 per cent, occurred. The patient was considered to be excessively depressed if respiration was below ten per minute and the usual reaction to stimuli was inhibited. . . .

"Postoperative complications . . . occurred in 4 per cent of the double-dose cases, while in the single-dose cases 8 per cent occurred. This surprising finding can perhaps be explained on the basis that the poorer risk patients received only a single dose of morphine.

"The relation of morphine depression to anoxia is a factor which cannot

be overlooked. Schnedorf and his associates mention morphine as one of the factors in a fatal case of anoxia. Warburg in his analyses of brain tissue respiration describes a 12 per cent decrease in the respiration of the cerebral cortex following morphine narcosis.

"Hawk and Wangeman, in a study of the effects of morphine gr. 1/4 on human subjects, found a 10 per cent reduction in pulse rate, a slight fall in blood pressure, a decrease of 10-30 per cent in respiratory rate, a decrease in the tidal exchange, a respiratory minute volume decrease of 20 per cent, and a decreased oxygen consumption of 5-8 per cent. . . .

"Schotz states that the injudicious use of heavy preanesthetic medication is often the starting point for pulmonary atelectasis. He considers marked depression of the respiratory functions by preanesthetic drugs a serious hazard and a contributing factor in the subsequent development of obstruction atelectasis. . . .

"Ross and Fairlie are of the opinion that morphine predisposes to laryngospasm. The results in our small series of cases certainly seem to bear out their contention."

"The preponderance of anesthetic difficulties and complications following the cases receiving the double doses is observed. Postoperative complications were twice as numerous with the single as with the double doses. . . .

"The routine use of double doses of morphine followed by potent anesthetic agents must be considered a very questionable practice."

SUGGESTED READING

Ten Years of Pentothal Sodium Intravenous Anesthesia; An Evaluation of Its Past, Present and Future—R. Charles Adams, M.D., John S. Lundy, M.D., and Thomas H. Seldon, M.D.—*Anesthesiology,* Vol. 6, No. 4—May 1945.

Avertin Poisoning with Acute Yellow Atrophy of the Liver and Toxic Nephrosis — Dorothy H. Andersen, M.D., New York, N. Y.—*Anesthesiology,* Vol. 6, No. 4—May 1945.

The Present Position of Anaesthesia —John Elam—*Practitioner* 153:238-244 (Oct.) 1944.

Refrigeration Anesthesia of the Extremities: Its Application and Use with a Report of Cases—Duncan McEwan—J. *Florida M.A.* 31:153-158 (Oct.) 1944.

Factors which Influence Success in the Administration of an Anesthetic—N. A. Gillespie—*Ohio State M. J.* 45:25-33 (Jan.) 1945.

* * *

Lt. Mary Maxine Merfeld, ANC., a new member of A.A.N.A., is stationed at Ft. Warren, Wyoming and recently wrote a poem entitled, "Winds of Cheyenne" which was published in the local press and is reprinted here:

Blow softly, winds of Cheyenne—
There are so many sleeping.
How pure, how dear their dwelling place,
Those bodies who marched away and fell.

O blow ye whistling winds, blow soft,
Their weary souls to soothe,
They wade thro' slaughter to a throne:
God marked them for HIS own.

Asleep are the ranks of the dead,
Under the red, white and blue.
No more shall the sound of battle rouse them
They have kissed the sweet cross of martyrdon

Ye soldiers once possessed with celestial fire,
Remember the souls ye left behind you.
Guide our compass that points to Him,
Where God meets hearts with gentle care.

"Peace be still" ye turbulent winds
Wake not their souls that slumber around:
They haye found their rest
On our Father's breast.

For Amputation of Thigh: Ice Anesthesia

CLARENCE DENNIS, M.D.
Associate Professor of Surgery
University of Minnesota
Medical School

SINCE the original papers of Allen and his associates, wide interest has been expressed in the possibilities of amputation of extremities, afflicted with changes due to inadequate circulation, under no other anesthesia than refrigeration. As first described, the method was initiated, in cases of proposed low thigh amputations, by cooling the mid-thigh for a half hour, following which application of a tourniquet was found possible without undue discomfort.

The entire extremity was then encased in ice chips or ice water to a level several inches above the tourniquet. Such refrigeration was maintained for two and a half hours, and it was then found to have provided enough interference with sensation so that amputation could be done without other anesthetic agent. Refrigeration of the stump for several days postoperatively reduced the need for sedation.

Healing of the wound was found to be slower than in the absence of refrigeration, but the authors felt that they avoided many of the difficulties of the usual amputation procedure in these frail old patients, such as shock, postoperative nausea, difficulty in the control of the diabetes, anesthetic hazards and similar conditions.

At the University of Minnesota Hospitals it seemed worth while to try to evaluate the claims of the advocates of this type of procedure, and a plan of study was adopted in conjunction with Dr. David State, then resident on surgery, and through the cooperation of many members of the surgical and nursing staffs. Alternate cases coming to amputation for diabetic or arteriosclerotic gangrene have been submitted to amputation under refrigeration anesthesia, and the remainder have had amputation under whatever other type of anesthesia seemed most suited to the case.

The number of cases so far coming into this study is about fifty. Amputations through the lower thigh had already been found most safe in this group of patients, and all the operations in the study group were at this level. Final conclusions cannot yet be presented, but the impression thus far drawn is that the mortality is about the same in the two groups of patients, but that in certain selected types of case, the use of refrigeration offers advantages which cannot otherwise be matched.

One such case had a five-day-old coronary arterial thrombosis which complicated the proposed emergency amputation procedure. Recovery was very satisfactory.

Reprinted from August 1945 issue, "Hospitals", published by The American Hospital Association.

In the course of this experience, much has been learned, and our procedure has gradually been refined. The program which has worked best at this hospital is as follows:

1. Five hours before surgery: Application of five ice bags around the thigh two-thirds of the way from the knee to the groin. These are bound in place by a roller bandage. This may be done by the nurse.

2. Three one one-half hours before surgery: Removal of the ice bags and application of a tourniquet. As recommended by Crossman *et al.,* this may be a piece of gum rubber tubing, one centimeter in diameter, passed as tightly as possible two times around the thigh at the center of the refrigerated area and secured by a strong Ochsner hemostat with the handle lying in the inguinal region. The author has been equally satisfied with the use of an Esmarch bandage in the same fashion. Tourniquet application should be done by the surgeon or his assistant. Usually the preliminary refrigeration does away with the need for sedation.

3. Immediately after placement of the tourniquet: The patient is placed on an operating room litter, the head of which has been elevated six inches above the foot to keep ice water from soaking his back. The litter is supplied with a half-length, rubber-covered mattress to support the head and torso. A special box, half the width of the mattress, is placed on the lower end of the litter, enough on the involved side to leave space for the relatively normal leg to lie on pillows beside the box.

(The box in question was especially constructed by two senior medical students, Claude Hitchcock and Leo Gehrig, early in 1944. It is watertight and insulated, and is fitted by water-proofed cloth to a nicely fitting sponge rubber cuff which surrounds the leg four inches above the tourniquet.)

Shaved ice is placed in the box in quantity sufficient to surround completely and cover the extremity to a point four inches above the tourniquet. About six 14-quart buckets of ice should suffice.

4. Refrigeration period: In hot weather especially the ice must be replenished with a bucket or two during the ensuing three and one-half hours. The patient has no particular discomfort during this time if the tourniquet has been sufficiently tightly applied. Some have had lunch before going to surgery, which usualy comes in the early afternoon. A half-dozen pints of sterile saline solution may be placed in the ice to be chilled for use during the operation.

5. Preparation for surgery: at the time of surgery, the patient, the litter and the box of ice are wheeled into the operating room and kept undisturbed until the surgeon and two assistants are scrubbed and gloved, ready to prepare the thigh. The wheels of the litter are locked or sandbagged so the procedure can be done with out transferring the patient to another table. At this point the ice is largely scooped from the box, the leg is lifted, and the box is removed from the litter by four unscrubbed operating room assistants. The extremity is quickly dried, prepared with Novak's solution and draped, leaving the tourniquet outside the field so it can be removed from under the drapes by the room nurse at the proper time without soiling the field.

6. The amputation: The amputation is now performed quickly, preferably chilling the instruments in the cold saline solution already mentioned, and washing the wound with chilled saline before closing. The tourniquet is removed just before closure and any further bleeding checked.

7. Postoperative period: A dry, compression dressing is covered with sterile oiled silk, and three ice bags are fastened outside this to the stump by means of towels and safety pins. One of these bags is removed each day. The patient usually eats supper on return to the ward. Sutures are not removed for 12 to 14 days, when patients are usually ready for dismissal.

This method implies operation at a time which can easily be preceded by five hours of preparation, and therefore fits nicely our usual afternoon operating schedule. It implies ready availability of considerable quantities of shaved ice, a proper box to encase the ice and the leg, enough nursing help to see that adequate coverage of the leg with ice is maintained, and a litter the head end of which can be raised. Adequately help at the proper moment in the operating room is indispensable, as the anesthesia persists only about 45 minutes following removal of the extremity from the ice.

Other methods of refrigeration are possible. A rubber sheet can be used, but it is inefficient, messy, and uncomfortable for the patient. Crossman and his associates are using a mechanical cooling unit, but unfortunately more are not now available.

The procedure described obviously involves several chores and restrictions not found when general anesthesia is used, but Dr. State and I have reached the conclusion that certain cases in our series have recovered nicely under this regimen who would not otherwise have survived.

Certain good objections have been stressed by Heinbecker and his associates, but the method is effective in spite of these. Patients who have had one extremity removed in this manner and the other under other methods of anesthesia have uniformly expressed preference for refrigeration.

Conclusion: Refrigeration anesthesia for thigh amputations for arteriosclerotic and diabetic gangrenes involves more preparation and help than more conventional types of anesthesia, but it offers certain definite advantages in certain types of cases.

BIBLIOGRAPHY

1. Allen, F. M. Reduced temperatures in surgery: I. Surgery of limbs. *Am. J. Surg.* 52: 225, 1941.

2. Crossman, L. W., Ruggiero, W. F., Hurley, V., and Allen, F. M. Reduced temperatures in surgery: II. Amputations for peripheral vascular disease. *Arch. Surg.* 44: 139, 1942.

3. Novak, M., and Hall, H., A method for determining the efficiency of pre-operative skin sterilization. *Surgery* 5: 560, 1939.

4. Heinbecker, P., and Large, A. Refrigeration in clinical surgery. *Ann. Surg.* 120: 707, 1944.

5. Large, A., and Heinbecker, P. The effect of cooling on wound healing. *Ann. Surg.* 120: 727, 1944.

* * *

A member writes the headquarters' office of A.A.N.A. this: "I highly approve the elevated standards which have come about in our association in the past five years. I feel that the individuals who have worked so faithfully on these committees are to be highly commended for their fine work."

Superiority Proved in War Time Use

BARALYME

is increasingly in demand for anesthesia and gas therapy

This modern carbon dioxide absorbent maintains minimum possible concentration of carbon dioxide in rebreathing systems, without hazard of facial or mucous membrane burns. Baralyme requires no rest periods—is almost 100% effective for hours of continuous use. It is not hygroscopic—contains no inert binders—never packs in canister. The pellet shape minimizes fragmentation in use—vacuum treatment eliminates dusting.

Order Baralyme through your regular source of supply or direct.

MEDICAL GAS DIVISION

Thomas A Edison INC.

P. O. Box #45
Bloomfield, New Jersey

110 Arlington Street
Boston, Massachusetts

Also Producers of

CYCLOPROPANE—NITROUS OXIDE—OXYGEN—CARBON DIOXIDE AND OXYGEN MIXTURES—HELIUM AND OXYGEN MIXTURES. DISTRIBUTORS OF HELIUM — ETHYLENE — CARBON DIOXIDE — NITROGEN.

For Sale ——

A selection of back issues of *The Bulletin* of the American Association of Nurse Anesthetists (now THE JOURNAL) are now available for public sale, these dating back through 1936.

Order your copies while they last, to make your file complete and be a source of comprehensive professional material on the subject of anesthesia.

Priced at 50c each;
Four copies of selected issues, $1.00

* * *

If you are interested in specific articles which have appeared from time to time in *The Bulletin,* order the Index Pamphlet covering everything which has appeared between 1933-42, mailed you on receipt of 10c in stamps to cover handling costs.

Send your order with remittance promptly to:

AMERICAN ASSOCIATION
OF
NURSE ANESTHETISTS
18 EAST DIVISION STREET, CHICAGO 10, ILL.

LETTERS from Members

MYRA L. SAWYER, who returned from her medical missionary assignment in China to the United States a few months ago, writes interestingly of some of the medical and personal problems she experienced during the course of the war. She writes:

"Warm greetings to all 'China Old Hands', and the many friends here in the homeland who, because of war conditions and postal uncertainties, may have had little or no news of me during this last term of service.

"I last left the United States in the winter of 1938, under the auspices of the Methodist Board of New York, to serve as chief anesthetist at the West China Union University Hospitals, Chengtu, Szechuan. Because of the steadily increasing tension of the times, high cost of building materials, and the unfavorable rate of exchange for monies in hand, the new university hospital, (the P.U.M.C. of the west) which all had expected would be completed within the year, was not ready for opening for nearly two years. In the interim I served the United Church of Canada's men's and women's hospitals in the city, and also had charge of the surgical supply stockroom. With the opening of the new hospital at the campus I divided my time, going by riksha three days a week to the city operating rooms. I taught the theory of anesthesia to the fifth year medical students, and supervised their practice during their interne year; insofar as it is humanly possible for one person to supervise classes of eighty or more working in operating rooms two miles apart!

"Our equipment was meagre at best, and especially so in these last years when transportation of supplies became increasingly difficult. Before the war gas anesthesia was used in China only at the Peking Union Medical College Hospital, and one or two port city institutions. There are no gas machines in West China. So long as gas would need to be imported the price of such an anesthetic would be prohibitive for the average patient. We used ether, spinal, local, caudal, colonic, Ethyl Chloride, Evipan, Avertin,—everything we could get shipped in to us. My Richardson vapor bottle and foot pump, and my entire stock of Avertin and Evipal, which I had painstakingly taken out in my luggage, was burned when the Women's Hospital was entirely destroyed by fire (sabotage) in my second year in Chengtu. These goods were replaced from Boston but never reached me, probably lost at Rangoon when a large shipment of Red Cross and other supplies were burned at the dock.

"These last years it became increasingly difficult to secure foreign ether, I finally secreted the last few precious pounds to use only for babies or especially toxic missionary patients! We were forced to use locally prepared ether. It did not have the "holding power" of the foreign product, but with care we had no untoward results, (Tell it not in Gath nor to my chief in anesthesia at Western Reserve!) but we were forced to use some chloroform of which we had a fair stock. I used it judicially, for inductions, where in America I would have used nitrous oxide and oxygen, and for minor operations of brief duration.

"This last year we were able to secure a limited quantity of Sodium Pentothal, and found it very valuable in certain cases. We also secured the appa-

ratus for giving continued spinal anesthesia which helped greatly for prolonged operative procedures. So much for my work of this term of service, probably my last on the mission field. During this period we graduated some 1,000 medical students, and I gave or supervised many thousands of anesthesias.

"Some twenty-three thousand miles have I travelled since leaving Chengtu on the 8th of January, by planes, trains, and naval transport.

"Man proposes, but God disposes . . . Out of a clear sky (if such can ever be said to exist in a cloudy damp Chengtu winter!) came the order from General Wedermeyer, 'Evacuate all missionaries sixty or over, all invalids, and all wives with young children.' This message was transmitted to us by the mission treasurer at Chungking, with instructions to go immeditely without waiting for argument. I was sick at heart for the need for anesthetists was never more desperate. ALL our internes had been drafted in November by the government. I had doubled my class work, taking on both fourth and fifth year students in an attempt to bridge the gap, but had just completed their theoretical course. None of them had even one day of practical supervision in the operating room, just a few days in dog surgery. But there was no choice. With only five days' notice I packed two suitcases and a dunnage bag, regretfully sold all else for what I could get, or bestowed such upon needy Chinese friends . . .

" . . . It was strange to steal in and out of ports so silently, taking on wounded and prisoners of war. Our transport was equipped to carry ten thousand, a veritable small city. The crew were coast guards and the internal workings as to passenger personnel were under the control of the Army Transportation. We women made the hatch outside our cabins our general sitting-room headquarters. The husbands travelled with the troops a deck below, but could visit their families and friends in the officers' lounge, and on our upper deck. To my delight one of my best friends in Chengtu was one of my cabin mates. A number of West China missionaries and families are still stranded in India because the captains are loath to take small children on the transports. Not until the journey was nearing its end did we know definitely that we were likely to be landed in San Pedro. We reached the California shores on March 1 . . .

" . . . Only now do I fully realize how tired I was from the strain of heavy work under inadequate facilities, crude living conditions, economic pressure, and of course the frequent bombings of the city and nearby airfields. Even yet, here in residential Brookline, fire and police sirens still spell airraid alarms to me if I am off guard or asleep. I am not yet orientated to living where traffic is one's chief personal danger.

"My close friend of more than twenty years, Miss Minnie Goodnow, met my train in Boston and took me to her room for Easter, until we could find a room for me nearby. She is a well known nurse author, and even now, though past the usual age for such a position, is ably serving for the duration of the war as directress of nurses at the Pratt Diagnostic Hospital, a new and finely equipped unit of the New England Medical Center . . .

" . . . Would that I could turn the clock of time back twenty years, and be privileged to look forward to a share in rebuilding the work in China we so long held dear. That must be done by others. The hospital, schools, homes, and church at Tehchow, the buildings, are in the hands of the Japanese. But the spirit of our Christians lives on. Our babies of earlier years, my own boys and girls whom we trained, praying and loving them into manhood and womanhood, are now in the front lines. I found them in base hospitals; Red Cross Units; Ambulance Corps; First

Aid training camps; and on the faculties of the far west universities. Think with pity of the old folk back on the farms of North, Central, and South China, the family clan broken up; animals and carts seized; crops commandeered; older sons forced into the army; daughters in danger of ravage; school age children refugees in schools and colleges thousands of miles distant from home. Against this is the brighter picture of that which even the havoc of eight years of war has brought; forced modern industrialism and social economy; mass education; cooperatives; and now the development of representative government. We are prone to measure the advance of China with our American yardstick, judging her by the standards too often so far from ideal which we have developed after more than one hundred and fifty years of democratic government. In a few months the People's Congress will convene, to adopt the nation's constitution. This shifting of responsibility for the government of China from the Party to the People is of tremendous historic significance. It is concrete evidence that their eight years of war and privation have not been in vain.

"Putting this final paragraph at the last is not like one's childhood method of leaving the frosting for the last bite. You will not like its content any better than do I. Early in May I entered the Pratt Diagnostic Hospital for a week's complete physical checkup, especially for X-rays of spine, chest, ribs, pelvis, et al. They omitted looking into my skull to see the condition of my brains! That might need attention later. But they missed little else. They diagnose the high-up pain in my back, and the numerous sore spots in my spine, ribs, and breastbone, which have largely dated since my severe fall in Chengtu two years ago, to a displacement of the fourth dorsal vertebrae, and a generalized lack of calcium in my bony structure. I will not bore you with medical terminology. Suffice to say that I am consuming much of this especial mineral in tablet form and specified foods in the hope that I will assimilate enough to replenish my deficiency. Whether my individual metabolism can accomplish this task time only can tell. In the meanwhile in an attempt to relieve the pain which has been steadily on the increase for some months, and to take weight off that vertebra I must wear a spinal brace. The doctors give me hope that I can take a position as anesthetist this winter, somewhere in the United States, with the proviso that I have reasonably light responsibilities, and no heavy lifting. So it is up to me to stiffen my backbone, literally and figuratively, and make the best of it . . .

"The address given below will always reach me. With warm greetings to all friends, new and old. God bless you every one: c/o Miss M. Goodnow, 142 St. Paul Street, Brookline, Masssachusetts."

Evelyn K. King, has written to her professional friends in her home state of Texas a letter describing her military assignment in England, from which the following is quoted:

"You cannot imagine how happy I was when the Bulletin of the American Asociation of Nurse Anesthetists came and then later the Bulletin of Texas Association of Nurse Anesthetists. Imagine the surprise when I read that the Texas Association voted to pay our last year dues. It was so kind of your members and I certainly do thank you from the bottom of my heart. Just the thought that you are remembered by the members back home is a wonderful feeling.

"England has proven quite interesting. I have been overseas eighteen months. All of this time with the exception of one month has been spent with this same unit. The other month

was with the 96th General Hospital which activated in Texas. When we arrived in England it was revealed that the 96th would function as a neuropsychiatric hospital. There was little need for surgeons and anesthetists so as a result, I came to the 232nd Station Hospital as an anesthetist.

"We have had some interesting and exciting times in work as well as in play. Our unit at one time was divided —half in Southampton and my half at Tidworth. Tidworth is an Old English Post, incidentally it is where Montgomery trained his 5th Army. I was the only anesthetist there. Spinals which the surgeons gave, G.O.E. and pentothal were used chiefly there. There have only been two anesthetists with this unit at all times; a medical officer and myself.

"Colonel Ralph Tovell from Mayo Brothers is the Chief Consultant in Anesthesia in the E.T.O. When we first came over, he held a week school for anesthetists. Here we learned the pros and cons of anesthesia in the E.T.O. and Army. The course was an instructive one. We also met many interesting men of anesthesia.

Another interesting experience was a month of detached service with a general hospital which was the chest center of the E.T.O. Here Colonel Tourof from New York was the Chief of the Chest Service. Major Adelman from Mt. Sinai, New York, was the Chief of Anesthesia. Cyclopropane was used occasionally. It was interesting to note because there are only two or three hospitals over here permitted to use cyclopropane. The cyclopropane is not issued to a unit or hospital, but to an anesthesiologist. Major Adelman happened to be the Junior Consultant in Anesthesia for that medical center. However, G.O.E. was used chiefly in chest cases. The patient was intubated in each instance where the pleura was opened.

"Major Adelman taught anesthesia. He gave interesting courses and took great pride in his nurse students as well as the medical ones. He has formerly taught medical students in New York.

"There are not too many graduate nurse anesthetists over here and there are still fewer members of the Association. I met a member who had taught in Long Island School of Anesthesia in New York for twelve or more years.

"Another coincident was the fact that Lt. Margaret Moore from Austin, Texas, and myself came in the Army together. We were both graduates from Seton School of Nursing, Austin, and from Charity Hospital School of Anesthesia and were together until I came to England. A few months later she went to India. Lt. Lorine Slagle also a graduate from Charity School of Anesthesia came over with the 96th General Hospital. She was transferred to a field evacuation hospital."

"Deadline" Dates

Material contributed for the February 1946 issue of THE JOURNAL of the American Association of Nurse Anesthetists should conform to the following schedule of due dates:

Professional articles: December 15.

News reports, association minutes, miscellaneous items: January 1.

Advertising copy and space instructions: January 1.

Because of production routines and other requirements these "deadline" dates must necessarily be strictly adhered to. Readers are urged to keep them in mind.

This November issue of THE JOURNAL is several weeks late in being printed and mailed, due to the protracted printers' strike in the Chicago area which prevented hundreds of publications printed in this city from reaching readers on schedule.

CLASSIFIED ADVERTISING $6 per insertion, payable in advance.

NURSE ANESTHETIST: West Baltimore General Hospital. $150 a month. Full maintenance. Address R. R. Griffith, Administrator, Rayner Avenue and Dukeland Street, Baltimore 16, Maryland.

ANESTHETIST: For New 400 bed hospital, employing several Anesthetists. Attractive salary, no maintenance. For particulars write to Sister Gertrude, St. Mary's Hospital, Rochester 11, New York.

EXCELLENT opportunities for anesthetists in San Francisco and the Bay Area. Salaries, $225 to $235 per month. All modern methods of anesthesia used. Richmond Business and Professional Placement Bureau, 1100 Roosevelt Ave., Richmond, Cal.

WANTED: Three anesthetists for increase of staff so 8-hour duty may be allowed; salary $185 monthly with full maintenance or allowance for living out. Will accept new graduate. Apply Superintendent, Woman's Hospital, Detroit 1, Michigan.

REGISTERED ANESTHETIST: Position in a one hundred bed A.C.S. approved hospital. Three anesthetists in department. Write Superintendent, Community Hospital, Battle Creek, Michigan.

WANTED AT ONCE: Graduate Nurse Anesthetist for 110 bed General Hospital. Good salary. Apply Sister M. Rita, Superintendent, St. Francis Xavier Infirmary, Charleston, S. C.

NEEDED: One anesthetist immediately; permanent position; good salary, one-hundred bed hospital. Three anesthetists on rotating service. Belmont Community Hospital Ass'n., 4058 West Melrose Street, Chicago 41, Ill.

WANTED: Nurse anesthetist, graduate of organized school of anesthesiology; salary, open, dependent upon experience. Write: Strong Memorial Hospital, Rochester 7, New York.

CLASSIFIED ADVERTISEMENTS—

This page is being reserved for classified advertisements of any nature, with particular emphasis on "position open" and "position wanted" insertions. A maximum of 40 words is accepted for each $6 single insertion, remittance to accompany copy. Orders should be received on the tenth of the month preceding date of issue. Deadline for the February 1946 issue is January 10, 1946. Address:

The Journal

AMERICAN ASSOCIATION OF NURSE ANESTHETISTS

18 E. Division Street Chicago 10, Illinois

ASSOCIATION News
State and National

Georgia . . .

Caroline E. Hohenschutz, St. Joseph's Infirmary, Atlanta, Ga. has assumed the responsibilities of secretary-treasurer for the Georgia State Association of Nurse Anesthetists. Miss Hohenschutz is filling the unexpired term of Mary Hyatt, resigned.

Michigan . . .

Ione Wessinger is filling the unexpired term of Elizabeth Blanchard who resigned as secretary of the Michigan State Association of Nurse Anesthetists. Miss Wessinger is now secretary-treasurer.

Oregon . . .

The first fall meeting of the Oregon Association of Nurse Anesthetists was held September 11, 1945 at the Graduate Nurses Home of the Good Samaritan Hospital, Portland.

The meeting, at which thirteen members were present, was called to order by the president, Mrs. Elizabeth Johnson. The treasurer reported that the books, which had been audited during the summer, showed a balance of $357.54.

Mrs. Margaret French, 3502 S.W. 11th St., Portland 1, was elected first vice president in place of Aimee Doerr, who has accepted a position in Texas. It was announced that the Oregon Association of Nurse Anesthetists has been accepted as a member of the Oregon Association of Hospitals. Mary Davis was appointed delegate to the meeting of the Hospital Association to be held September 27-28 in Gearhardt. Mrs. Josephine Bunch was selected as alternate.

The question of retaining State Committees on Credentials was discussed and those present voted to retain them.

The next meeting will be on October 16, at St. Vincent's Hospital, Portland.

Refreshments were served following the meeting.

Oklahoma . . .

The annual meeting of the Oklahoma State Association of Nurse Anesthetists was held Saturday, September 15, 1945 in the Oklahoma City Clinic Building.

The program consisted of the following papers: The Hering-Breuer Reflex, by Beatrice Pitt; History of Anesthesia, by Julia D. Loftus; Curare in Anesthesia, by Iredelle Ross; Sodium Pentothal, by Margaret Stallings; Cyclopropane Anesthesia, by Hallowe'en Walker Bertram.

The Oklahoma Association voted to pay the dues of members from this state who are in service overseas.

Officers elected: President, Mrs. Hallowe'en Walker Bertram, Wesley Hospital, Oklahoma City 3; Secretary-Treasurer, Julia D. Loftus, Community Hospital, Elk City.

Following the meeting a dinner was given by the staff physicians of the Wesley Hospital. The dinner was held in the Empire Room of the Hotel Black.

Beatrice Pitt has been serving as acting President of the Oklahoma State

Association of Nurse Anesthetists during 1945.

Pennsylvania . . .

The Pennsylvania State Association of Nurse Anesthetists has forwarded a check for $100 to the American Association of Nurse Anesthetists, with the following letter:

"By recent action of The Board of Trustees of the Pennsylvania State Association of Nurse Anesthetists it was voted that $100 be donated to the American Association of Nurse Anesthetists for the use of the Education Committee.

"In deep appreciation of the work that Committee has done for the Association we herewith enclose a check for the above amount."

The National Association is pleased to have such recognition of the work of this important committee.

Utah . . .

MRS. MARY A. NORMAN, 303 3rd Ave., Salt Lake City is the new Secretary-Treasurer for Utah.

Notes from the Executive Office

The American Association of Nurse Anesthetists is registered with the United States Treasury. The following information contained in a letter received from Norman D. Cann, Deputy Commissioner, will be of interest to the members:

"Contributions made to you are deductible by the donors in arriving at their taxable net income in the manner and to the extent provided by section 23 (o) and (q) of the Internal Revenue Code, as amended, and corresponding provisions of prior revenue acts.

"Bequests, legacies, devises or transfers, to or for your use are deductible in arriving at the value of the net estate of a decedent for estate tax purposes in the manner and to the extent provided by sections 812(d) and 861 (a) (3) of the Code and/or corresponding provisions of prior revenue acts. Gifts of property to you are deductible in computing net gifts for gift tax purposes in the manner and to the extent provided in section 1004 (a) (2) (B) and 1004 (a) (2) and (3) of the Code and/or corresponding provisions of prior revenues acts."

* * *

Members are reminded that the fiscal year starts September 1. Dues are payable within 30 days. Members whose dues are not paid on or before March 1, 1946, will be dropped from the mailing and membership list. A penalty fee of $3 will be imposed on those paying dues after March 1, 1946. If dues for 1946 are not paid before August 31, 1946, readmission to membership is in accordance with current membership requirements.

* * *

"Anoxia Begets Anoxia—The time to BEGIN to use oxygen is before there is any CERTAINTY that it is needed," by C. K. Drinker, M.D., as quoted in "Oxygen Therapy News, published by Linde Air Products Co.

Navy Nurse Cited for Meritorious Service

Lt. (j.g.) Ruth Toenberg, N.C. USNR, and a member of the American Association of Nurse Anesthetists, was honored at a ceremony held June 20, at the U. S. Naval Hospital, Seattle, Washington, when she was the recipient of a citation for meritorious service while aboard a hospital ship. It was the first ceremony of its kind to be held at this Naval hospital, at which a nurse was so honored.

Commanding Officer Captain F. C. Hill presented Lt. Toenberg with the citation which was issued from the commander of the Service Force, U. S. Pacific Fleet.

The citation awarded Miss Toenberg read: "For meritorious service in the line of her profession as a nurse on board a U. S. hospital ship sailing in enemy waters from November, 1943, to April, 1945. Through her able assistance, exceptional ability and tireless devotion to duty the care of the wounded was conducted in an efficient and salutary manner. Her deft, gentle and sympathetic nursing care contributed substantially to the alleviation of the suffering of the wounded and minimized loss of life.

"Her personal influence and encouragement have inspired the crippled, maimed and blinded to renew their hope and revitalized their interest in life. The patience and physical endurance displayed by her during long and arduous hours was outstanding. Her exemplary conduct throughout was in keeping with the highest traditions of the Naval Service."

The citation was signed by Vice Admiral W. W. Smith, U.S.N.

Lt. (j.g.) Ruth Toenberg, NC, USNR, is shown here receiving a citation for meritorious service, from Captain F. C. Hill (MC) USN.

Board of Trustees Holds Annual Meeting

The annual meeting of the Board of Trustees of the American Association of Nurse Anesthetists was held October 3-7 in Chicago, Illinois. All members were present and attended every session. Reports of the officers, Executive Secretary, and all committees were read and discussed.

Hilda Salomon was appointed Chairman of Arrangements and Program for the next annual convention which will be held in Philadelphia, Pennsylvania commencing September 30, 1946. A tentative program for the convention has been outlined.

The Committee on Curriculum presented a curriculum which was referred back to the committee for further study and revision. A curriculum will be presented to the members of the Association for consideration at the 1946 convention. The report and curriculum submitted showed that much time and effort had been spent on this project.

The Committee on Education, which has been working on the "Basic Essentials of an Acceptable School of Anesthesiology," presented recommendations which were referred back to the committee for revision and simplification. A second project of this committee has been the compilation of suggested forms for student records. The following forms were accepted with minor revisions: application, efficiency record, and monthly reports. These suggested forms will be sent to the schools of anesthesiology when they have been completed, after which copies may also be secured from the Executive Office.

The report of the Committee on Examinations showed the satisfactory progress of this new undertaking. The examination program has stimulated many anesthetists, who were not members of the Association, to make application. A discussion of the application and transcript forms resulted in the decision to appoint a committee to study, revise, and simplify them. The revised forms will be submitted to the schools for suggestions. To avoid delay in application procedures the Board of Trustees recommended the abolishment of the state committees on credentials. State associations which have not replied to the letter sent from the Executive Office on this suggestion are urged to present the question to their members and notify the Executive Secretary as soon as possible.

Examinations will be held November 19, 1945 and May 6, 1946. With the removal of travel restrictions, and, in order to curtail expenses of the examination program, applicants may, in the future be required to travel greater distances to take the examination. This will eliminate holding the examination in so many localities for but one or two candidates.

The Treasurer, and Chairman of the Committee on Finance, submitted her usual comprehensive reports and assisted the Board in preparing a budget for the coming year. As the scope of the work of the Association increases, expenses also increase. In spite of the increase in expense, the assets of the Association are steadily growing.

Cancellation of the annual convention made the preparation of a ballot unnecessary. A legal opinion rendered by an attorney stated, "While the By-Laws are silent on the subject of officers holding over until their successors are elected and qualified, it is a general rule

of law, established by the courts, that trustees or other officers of a corporation elected or appointed for a certain time, hold over after the expiration of their terms until their successors are elected or appointed. It is our opinion, therefore, that the officers whose terms expire this year will continue in office until their successors are elected."

The Committee on Nominations had been at work up to the time of the cancellation of the convention. Their reports shows the importance of the state associations and individual members taking a more active part in developing and recommending candidates for national officers and committee members. Experience gained by serving on state committees and as state officers is excellent preparation for work of national scope, in the opinion of the Board.

It is felt by the Board of Trustees that, inasmuch as THE JOURNAL is the official voice of the Association its development should be the primary objective in the coming year. The Executive Secretary is responsible for carrying out the policies laid down by the Board of Trustees and will, in collaboration with the Committee on Publications and the editor work toward the further improvement of THE JOURNAL.

The Committee on Publications made suggestions concerning the development of several new features in THE JOURNAL. Members are urged to submit original papers, abstracts, and interesting news items for publication. The membership list should be sent only to members of the Association, therefore, it was the decision of the Board of Trustees that the membership list will be published separately and mailed to members with the May issue of THE JOURNAL.

The Committee on Public Relations should be the coordinator of state problems, the Board agreed. It can function in this respect only if state associations keep it informed of their problems. During the past year this committee studied the proposed Draft Bill and will, during the coming year, keep members informed of the G.I. Bill of Rights as it affects anesthetists trained in army hospitals.

The Board expressed these views: State associations which did not hold meetings during the war should strive to build stronger organizations in the postwar period. The responsibility of each association lies with the Board of Trustees but the individual members elect their Boards. The state associations can develop better organizations only if each member is willing to make some contribution. The national association is as strong as its component parts which are the state associations.

The Committee on Revisions is preparing several revisions deemed necessary in the present By-Laws. These will be presented to the members for adoption at the next annual meeting. The proposed revisions will be published in the August JOURNAL and should receive the thoughtful consideration of all members.

The Committee on Trust Fund recommended that the monies accumulated in this fund be transferred to the general funds. The reason for this recommendation is that under the original plan the fund will grow so slowly that it will be impossible to give assistance to members for many years. The report was referred back to the committee for further study. Recommendations will be presented to the members at the 1946 meeting.

The special Committee on Postwar Planning is actively engaged in studying the problems of service-trained anesthetists and is preparing plans whereby they may become eligible for membership in the Association. It is the consensus of opinion that the training of each individual must be evaluated before recommendations can be

made. Form letters will be sent to schools of anesthesiology in an effort to determine which can accept service-trained anesthetists for additional training. It was the decision of the Board of Trustees that army-trained anesthetists be allowed to take the qualifying examination if they have had at least a course of six months. The Committee on Postwar Planning is setting up a program of additional training for those who have had a course of less than six months.

The Board is studying the problem of the approval program for schools of anesthesiology for nurse anesthetists. The problems involved are so numerous that no announcement can be made until plans are more definitely outlined.

The chairman of the Institute Committee presented her report. The discussion of the Institute resulted in the decision to hold a two-day session for members interested in schools, preparation for teaching, or advanced education. This session will be held two days prior to the next annual convention.

Many of the reports presented at this meeting will be published in future issues of THE JOURNAL.

Institute Serves Needs of Anesthesiology Instructors

One hundred and thirty-seven nurse anesthetists attended the first Institute of Instructors of Anesthesiology, sponsored by the American Association of Nurse Anesthetists which was held the week of October 8 at the Knickerbocker Hotel, Chicago, Illinois. The registration list included representatives from 34 states and one from Hawaii; and four army nurses who had seen overseas services and who are desirous of becoming instructors when they return to civilian life.

This first Institute to be conducted by the American Association of Nurse Anesthetists was unique in many ways. It was conducted in a pattern somewhat like a practice teaching university class. The week-long Institute included a full curriculum with a daily presentation by Joe Park, PH.D., assistant professor of education, Northwestern University who incorporated into his material educational methods broken down into three divisions: (a) Curriculum Construction, (b) Teaching Methods, and (c) Tests and Measurements. After the morning lectures, which were given by nurse anesthetists, Dr. Park disscussed the teaching method that should be used in presenting the material to students, placement of the subject in the curriculum, visual aids, teaching material and correlation of theory with clinical experience in the given subjects. This method of conducting was intended to help the schools of anesthesiology standardize their curriculum and teaching methods. More than 25 outstanding authorities on various phases of anesthesia constituted the faculty of the Institute.

The panel, "The Nurse Anesthetist's Plans for Tomorrow's Responsibilities,"

conducted by Dr. Malcolm T. MacEachern, associate director of the American College of Surgeons, brought forward the need for more specific departmental and inter-departmental policies to coordinate the efforts of all, in order to serve the patient more efficiently and to advance the medical and nursing science. In addition, Dr. Josiah Moore of Chicago spoke on the state-accrediting system for schools offering courses to returning veterans financed by the G.I. Bill of Rights. During the discussion it was learned that some schools have been accredited by their respective states and others had made application.

A great deal of interest was manifest in the desirability of locating a university which would provide an elective course of study leading to a degree in education; the major being in science, with emphasis placed on those courses most applicable to anesthesia. The most effective way to meet this need, it was felt, is to make a survey of how many nurse anesthetists desire to pursue such a course of study. With this information it will be possible to show a university how much such a course of study is in demand. Consideration of incorporating it into the university curriculum would then possibly follow. The Association plans to mail questionnaires to be filled in and returned by members of A.A.N.A., who are interested in securing a degree in education.

Registrants at the Institute indicated a preference for future sectional institutes designed for all anesthetists instead of for instructors. Representatives from schools of anesthesiology felt that a program for instructors should convene one or two days prior to the annual convention of the American Association of Nurse Anesthetists to discuss their respective problems. The suggestion was adopted that "Council of Schools" be temporarily considered to describe this group's collective activities. Should a pre-convention meeting be held, the nurse anesthetists not connected with schools will be welcome to attend.

The Postwar Planning Committee chairman, Janet McMahon, reported on the tentative program of education for nurses trained in anesthesiology in military hospitals. The discussion following the report clearly indicated three very important things: 1. The intensive study that this program will need to find a workable plan that will meet the requirements of all in this group. (2) The necessity for whole-hearted cooperation by the schools of anesthesiology. 3. The importance of getting this plan into operation as early as possible.

Since so many schools have accepted applicants for the full course in anesthesiology up to the spring and fall of 1946, it may be necessary to organize the schools for this purpose in hospitals not conducting schools. Any hospital affiliated with a university interested in setting up a supplementary course in anesthesiology is asked to submit such plans to the American Association of Nurse Anesthetists.

Hazel Blanchard, president of A.A.N.A., at the conclusion of Institute week, said: "The magnitude of this project—planning and holding our first Institute—is greater than any undertaking heretofore attempted by our Association. Not only were representatives from the schools of anesthesiology enthusiastic participants, but all nurse anesthetists benefited professionally by attending. This proved to be something the members want, and certainly those who came were emphatic in their approval of the program."

Mrs. Esther Myers-Stephenson, Winchester, Mass., as chairman of the Institute, was accorded much of the credit for its success. Working on her com-

mittee were Mary Duray, Evelyn Lackey, and Dorothy E. Kerns of Chicago who had the important responsibility of handling local arrangements; Mrs. Elizabeth Coleman Blanchard, Salem, Oregon, and Sister Mary La-Sallette, Detroit, Mich., as members of the committee, collaborated with Mrs. Myers-Stephenson in planning the program.

The Institute registrants were appreciative of the text books on anesthesiology provided as samples by the Medical Book Company of Chicago.

The February JOURNAL will carry a fuller report on the Institute and selected papers, which were delivered during the week, will be published.

Malcolm McEachern, M.D., in his remarks at the close of Institute week, advised his audience: "Don't be inarticulate about your job and your work. Tell them . . . at your hospitals . . . what you learned here, the advances in anesthesia, the advance of the nurse anesthetist and how she is projecting herself into the future and what she means to the hospital. . . . Of course you have to publicize your work a little in a public relations way. Be careful to build up an unparalleled record within your group. You are the people who will make these Institutes famous; you are the people who go back and talk about them. The people who go home are missionaries for the Institutes . . . they set the standards which will be increasingly higher at future Institutes."

EMBLEMS

A limited supply of sleeve emblems is available at .50 apiece. These will be sold only to those who have received their 1946 membership cards. Members in organized states must order through their state treasurer or secretary-treasurer. All orders must be accompanied by check or money order. Members in unorganized states may order from the Executive Office, 18 East Division St., Chicago 10, Ill.

State officers will send orders and receive a supply of emblems from the Executive Office once a month which may, in some cases, cause a slight delay in filling your order.

Calendar

March 11-12-13, 1946—New England Hospital Assembly, Boston, Mass.; The New England Assembly of Nurse Anesthetists will organize and hold a meeting in conjunction with this assembly.

Sept. 30-Oct. 4, 1946—American Association of Nurse Anesthetists, Philadelphia, Pa., annual convention.

Spring date to be announced—Southeastern Assembly of Nurse Anesthetists, held in conjunction with the Southeastern Hospital Assembly; place to be announced.

May 8-9-10, 1946 (Tentative)—Tri-State Assembly, Chicago, Ill.

Corrections and Additions to Membership List

ARKANSAS		
Breece, Mrs. Edith	328 W. Poplar	Paragould
CALIFORNIA		
Smith, Mrs. Louise A.	3508 Webster St.	Oakland 9
COLORADO		
Collins, Alma Jean	St. Anthony's Hosp.	Denver

ILLINOIS		
Sister Capistrana Hyalla	St. John's Hosp.	Springfield
LOUISIANA		
Coco, Mrs. Evelyn Hurf	2029 Benefit St.	New Orleans 17
MARYLAND		
Sullivan, Laura R.	St. Agnes Hospital	Baltimore 29
MICHIGAN		
Hammond, Arloine K. (Hamilton in Aug. Jr.)	2535 W. Grand Blvd.	Detroit 8
MINNESOTA		
Carlson, Mrs. Elizabeth Kellaher	588 E. Cook Ave.	St. Paul
Sister Daria Duerr	St. Cloud Hospital	St. Cloud
MISSOURI		
† Bauer, Mrs. Mary L.	5112 Labadie Ave.	St. Louis 15
Timmerman, Mrs. Margaret Sullivan	City Hospital	St. Louis
NEW JERSEY		
Sister Grace Bernadine O'Connor	All Souls Hospital	Morristown
NEW YORK		
Barrett, Lela M.	60 E. 40th St.	Brooklyn
Bordes, Suzanne T.	31-31 41 St.	Long Island City 3
Bridge, Mrs. Patricia P.	31 Davison Place	Rockville Centre
Gerken, Frances G	622 W. 168 St.	New York 32
Graham, Mary	132 E. 45th St.	New York City
Ludwig, Mrs. Donna R.	1315 York Ave.	New York 21
McFadden, Dessa	c/o Myra McFadden Munderf Star Route	Brookville, Pa.
Mollica, Mrs. Adele R.	175 Minna St.	Brooklyn
Roach, Evelyn	325 E. 77th St.	New York City
Scott, N. Beatrice	Long Island College Hosp.	Brooklyn
Stewart, Anna E.	210 E. 64 St.	New York City
OREGON		
Sister M. Teresa Helene Glynn	St. Anthony Hospital	Pendelton
PENNSYLVANIA		
Anastasus, Mrs. Isabelle K.	Carlisle Hospital	Carlisle
RHODE ISLAND		
St. Pierre, Jeannette	75 Pond St.	Pawtucket
TENNESSEE		
Kooyman, Mrs. Jacqueline C.	157 Hollywood	Memphis
TEXAS		
† Hamilton, Pvt. Mamie Baker	Monroe General Hospital	Swannanoa, N. Car.

VIRGINIA		
Ailstock, Harriet V.	711 Washington St.	Portsmouth
Nelson, Capt. Bernice A.		Overseas
WASHINGTON		
Bell, Mrs. L. J.	Rt. 2, Box 2	Raymond
Michel, Mrs. Albert (Correction in Name from Miller)	5510 West Drive	Everett
Shaw, Audrey T.	1108 9th St.	Seattle 1
INDIA		
Hartig, Evva P.	Good Samaritan Hosp.	Jhelum, Punjab, India
PANAMA, R.P.		
Dubois, Mrs. Margarita	Hospital Santo Thomas	Panama, R.P.

New York State Sets New Requirements

Important for members of the New York State Association of Nurse Anesthetists and all who plan to practice in New York State, are the new statutory practices which are quoted here:

THE PRACTICE OF NURSING STATUTORY REQUIREMENTS; EDUCATION LAW, ARTICLE 52.

Section 1379— REGISTRATION.

1. Every person to whom a license to practice nursing as a registered professional nurse or as a practical nurse is issued under the provisions of this article shall, before beginning to practice, register his or her name, residence, place and date of birth, number and date of his or her license and the date of this registration in the office of the clerk of the county in which the licensee intends to practice. The county clerk shall require the licensee to exhibit his or her license and to make an affidavit covering the above facts and stating that he or she is the person to whom said license was issued, that the licensee complied with all provisions of this article before receiving it, that no money other than the fee prescribed by this article was paid directly or indirectly therefor, and that no fraud, misrepresentation or mistake in material regard was employed or occurred in order that said license should be granted. The county clerk shall preserve said affidavit and shall issue to the affiant a certificate containing his or her name and a transcript of the entries in the register preceded by the words "registered in the office of the county clerk of ———— county as authority to practice nursing as a registered professional nurse" or "registered in the office of the clerk of ———— county as authority to practice nursing as a practical nurse," as the case may be. A county clerk having properly issued such a certificate of registration to a registered professional nurse or practical nurse, shall forward a duly attested copy of the same and a copy of the affidavit and evidence upon which said certificate was issued, to the department within thirty days of such initial registration. The county clerk's fee for taking such registration and affidavit and issuing such certificate shall be one dollar. No further or subsequent registration in the office of any county clerk shall be necessary.

2. Every person licensed, as provided by this article, to practice as a registered

professional nurse or as a practical nurse shall register with the department every two years as hereinafter provided, the registered professional nurses in the odd numbered years and the practical nurses in the even numbered years. On or before the first day of May of each year the department shall mail an application for such biennial registration to every person licensed to practice as a registered professional nurse, if the year is an odd numbered year, or to every person licensed to practice as a practical nurse, if the year is an even numbered year. Upon receipt of the application, which shall call for such information as the department may require, the applicant shall fill it out and forward it to the department with the fee of two dollars. Original applications for biennial registration shall be made under oath but subsequent applications may be made without affidavit. Having received the application and fee, and having verified the accuracy of the application, the department shall issue a certificate of registration which shall render the holder thereof a legal practitioner for the ensuing two years. Said certificate of biennial registration shall be dated September first and shall expire the thirty-first day of August in the second year following. If application for registration has not been made prior to September first an additional fee of one dollar for each thirty days of delay or part thereof beyond September first and up to January first shall be added to the regular fee. Should any person licensed to practice as a registered professional nurse or as a practical nurse continue to practice after January first despite the fact that he or she has not registered with the department as herein provided, he or she shall be considered an illegal practitioner and his or her license shall be considered as suspended until he or she has paid the additional fee herein required up to January first and has explained for his or her delinquency satisfactorily to the commissioner, who shall thereupon direct the issuance of his or her biennial registration certificate. In case of inability to satisfactorily explain this delinquency such license shall be considered as revoked, but with the understanding that it may be re-issued upon the recommendation of the board. Application for such re-issuance shall be made in such manner as the department shall direct.

In the month of January of each even numbered year the department shall make a list of those persons to whom certificates of biennial registration were issued during the previous year to practice as registered professional nurses. Such lists shall be distributed as the commissioner shall direct.

In the month of January of each odd numbered year the department shall make a list of those persons to whom certificates of biennial registration were issued during the previous year to practice as practical nurses. Such list shall be distributed as the commissioner shall direct.

A certificate of annual registration issued prior to the taking effect of this act shall be valid for two years from the date of its issuance.

The following is the amendment to the Nurse Practice Act, effective January 15, 1942; SECTION 1385, SUBDIVISION 3: In view of the present war emergency, notwithstanding the provisions of section 1375, this article shall not be construed as prohibiting the practice of nursing by other than registered or practical nurses until one year after the cessation of hostilities.

ACCORDING TO THIS LAW ALL NURSES SHALL, BEFORE THE EXPIRATION OF ONE YEAR FOLLOWING THE CESSATION OF HOSTILITES, FILE AN AFFIDAVIT AND REGISTER WITH THE COUNTY CLERK OF THE COUNTY IN WHICH THE LICENSEE INTENDS TO PRACTICE.

Genuine

Wilson Soda Lime

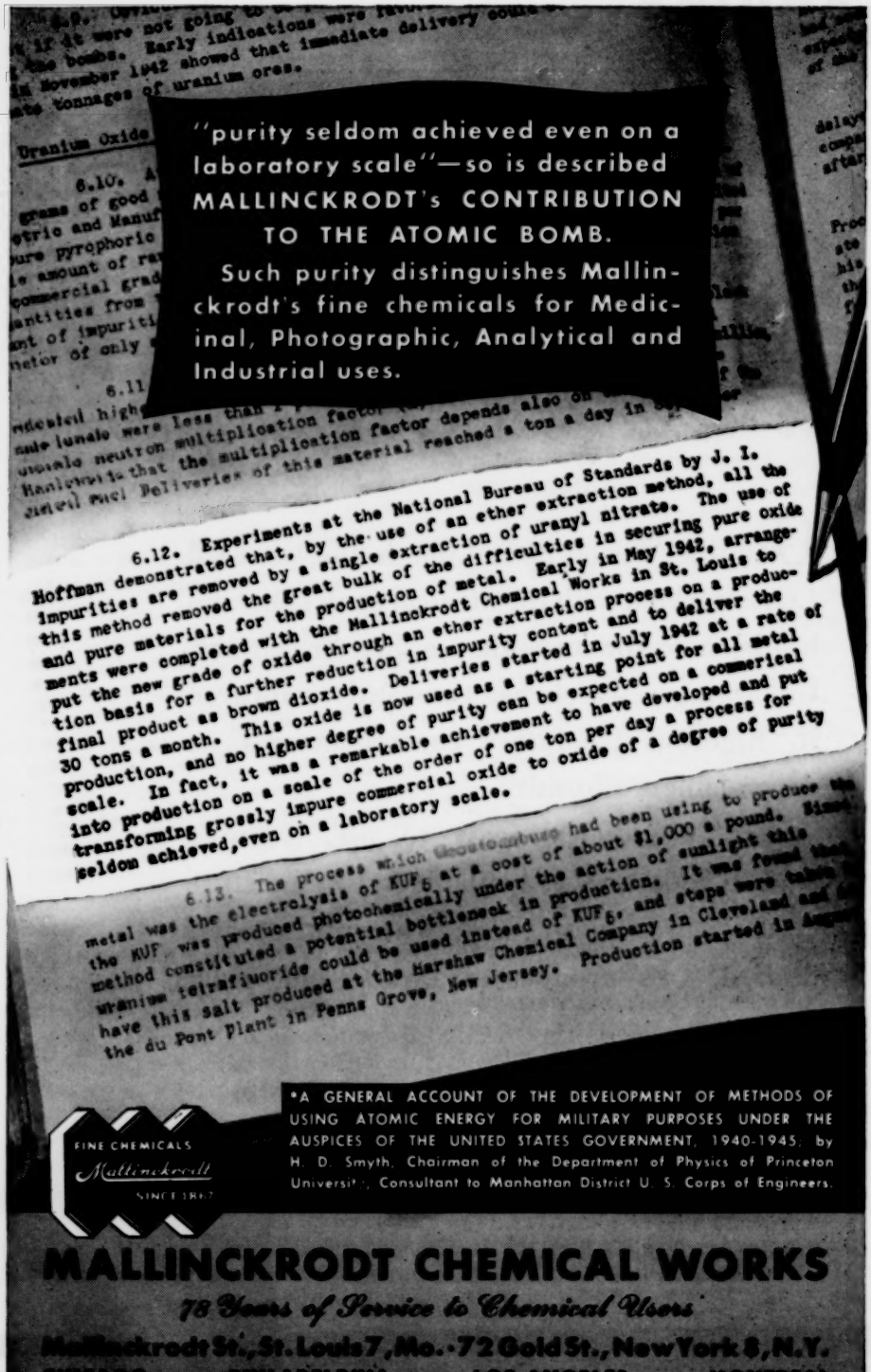
for reliable CO_2 absorption

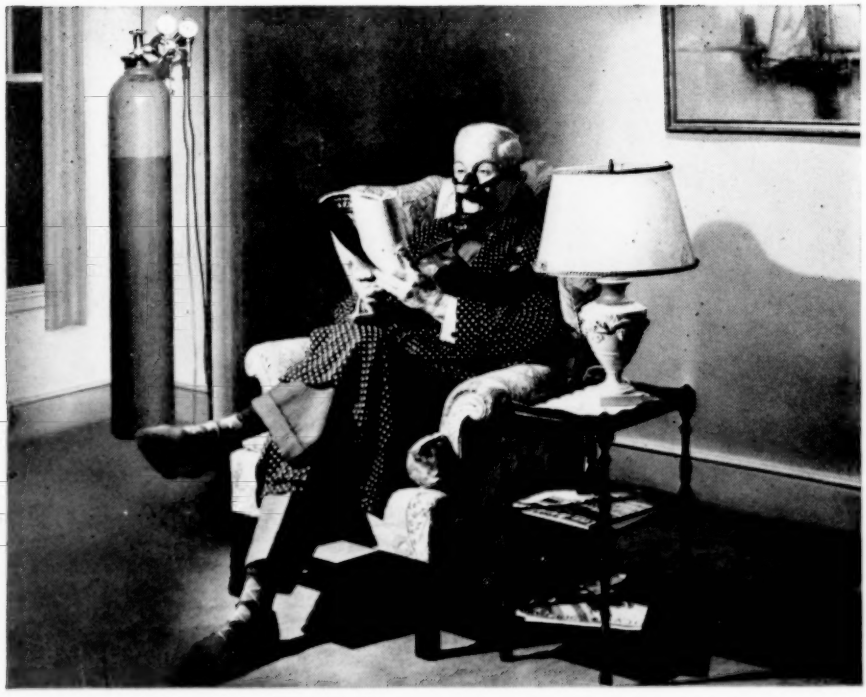
Genuine Wilson Soda Lime is the standard CO_2 absorbent with the medical profession and has been so for more than a quarter-century. Unflagging research has constantly improved it. Rigorous laboratory control assures its dependable uniformity.

Safe, economical, easy to use, Genuine Wilson Soda Lime is available in two moisture grades, three mesh sizes, with indicator if desired. — A product of Dewey and Almy Chemical Company.

CARRIED IN STOCK BY YOUR HOSPITAL SUPPLY HOUSE

★ ★ GENUINE WILSON SODA LIME ★ ★


"purity seldom achieved even on a laboratory scale"—so is described MALLINCKRODT's CONTRIBUTION TO THE ATOMIC BOMB.
Such purity distinguishes Mallinckrodt's fine chemicals for Medicinal, Photographic, Analytical and Industrial uses.
Uranium Oxide
6.12. Experiments at the National Bureau of Standards by J. I. Hoffman demonstrated that, by the use of an ether extraction method, all the impurities are removed by a single extraction of uranyl nitrate. The use of this method removed the great bulk of the difficulties in securing pure oxide and pure materials for the production of metal. Early in May 1942, arrangements were completed with the Mallinckrodt Chemical Works in St. Louis to put the new grade of oxide through an ether extraction process on a production basis for a further reduction in impurity content and to deliver the final product as brown dioxide. Deliveries started in July 1942 at a rate of 30 tons a month. This oxide is now used as a starting point for all metal production, and no higher degree of purity can be expected on a commerical scale. In fact, it was a remarkable achievement to have developed and put into production on a scale of the order of one ton per day a process for transforming grossly impure commercial oxide to oxide of a degree of purity seldom achieved, even on a laboratory scale.
6.13. The process which Mallinckrodt had been using to produce the metal was the electrolysis of KUF6 at a cost of about $1,000 a pound. Since the KUF6 was produced photochemically under the action of sunlight this method constituted a potential bottleneck in production. It was found that uranium tetrafluoride could be used instead of KUF6, and steps were taken to have this salt produced at the Harshaw Chemical Company in Cleveland and at the du Pont Plant in Penns Grove, New Jersey. Production started in August
*A GENERAL ACCOUNT OF THE DEVELOPMENT OF METHODS OF USING ATOMIC ENERGY FOR MILITARY PURPOSES UNDER THE AUSPICES OF THE UNITED STATES GOVERNMENT, 1940-1945; by H. D. Smyth, Chairman of the Department of Physics of Princeton University, Consultant to Manhattan District U. S. Corps of Engineers.
FINE CHEMICALS
Mallinckrodt
SINCE 1867
MALLINCKRODT CHEMICAL WORKS
78 Years of Service to Chemical Users
Mallinckrodt St., St. Louis 7, Mo. · 72 Gold St., New York 8, N.Y.
CHICAGO · PHILADELPHIA · LOS ANGELES · MONTREAL



Oxygen Therapy At Home

Oxygen therapy is frequently prescribed for angina pectoris and other ambulatory cardiac patients, asthmatics, severe migraine sufferers, pulmonary emphysema cases, and others afflicted with chronic conditions not requiring hospitalization, but yet benefited by oxygen inhalation for periods lasting an hour or more at a time.

When prescribed, the patient can easily be taught to administer the treatment himself. It is important, that the equipment be perfectly comfortable and that the patient be entirely familiar with its correct operation. Types of apparatus and current operating techniques are described in the Linde Oxygen Therapy Handbook, available without charge on request.

The nasal-type mask illustrated is only one of the several types of masks, face tents, and nasal inhalers available for self-administration of oxygen. LINDE Oxygen U. S. P. can be obtained locally from Linde distributors.

LINDE OXYGEN U.S.P.

OXYGEN THERAPY DEPARTMENT

THE LINDE AIR PRODUCTS COMPANY

Unit of Union Carbide and Carbon Corporation

30 E. 42nd St., New York 17, N. Y. UCC Offices in Other Principal Cities

In Canada: Dominion Oxygen Company, Limited, Toronto

The word "Linde" is a trade-mark of The Linde Air Products Company.

from OHIO

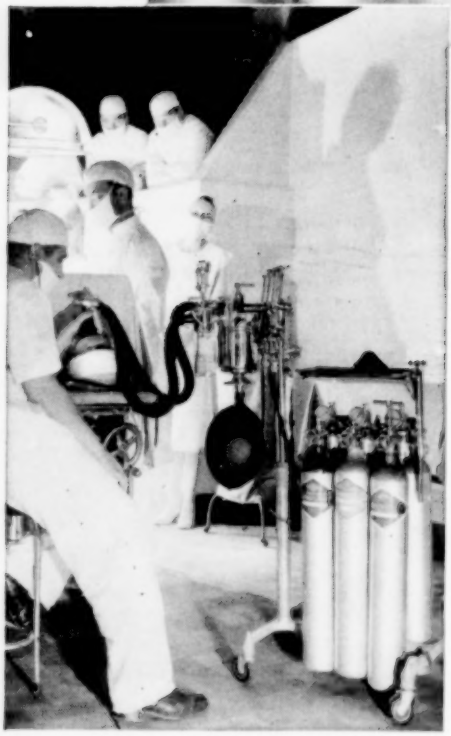
...means

UNIFORM PURITY

DEPENDABLE SERVICE

Ohio Anesthetic and Therapeutic Gases

NITROUS OXID • ETHYLENE
CYCLOPROPANE
OXYGEN • CARBON DIOXID
OXYGEN-CARBON DIOXID MIXTURES
HELIUM
HELIUM-OXYGEN MIXTURES



• Backed by more than 50 years of specialization, Ohio gases have earned the complete confidence of medical, surgical and anesthetic staffs.

Ohio anesthetic and therapeutic gases are of uniform high purity obtained by exacting methods of manufacture. These gases are delivered in cylinders that are sanitary in fact as well as in appearance. All Ohio cylinders are thoroughly cleaned on the inside to remove any possible contamination before the gas is compressed in them. Exteriors are cleaned and refinished each time a cylinder is filled.

Valves are checked, serviced and sealed to prevent the intrusion of dust and grease in the valve orifice and to make possible the distinction between full and empty cylinders.

When you specify Ohio gases you are assured not only of uniform high purity but also dependable service.

OHIO

THE OHIO CHEMICAL & MFG. CO.

PIONEERS AND SPECIALISTS IN GASES AND EQUIPMENT FOR ANESTHESIA, THERAPY, AVIATION, AND RESEARCH

GENERAL SALES OFFICE: 745 HANNA BUILDING, CLEVELAND 15, OHIO

Sales Offices in Principal Cities

In Canada: Oxygen Company of Canada Limited, Montreal and Toronto